Commonwealth of Kentucky

Strategic Plan for Statewide Communications Interoperability

January 2010

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Public Safety Professionals:

I am pleased to provide you the 2010 Commonwealth of Kentucky Strategic Communications Interoperability Plan (SCIP). Through the combined efforts of communications professionals representing state and local agencies on behalf of the Kentucky Wireless Interoperability Executive Committee (KWIEC), the Commonwealth has made remarkable progress towards the improvement of communications and interoperability for first responders statewide.

The annual revision of this living document shows the Commonwealth's continued commitment to its public safety community to meet its communications and interoperability needs. This plan will also serve as a benchmark as we continue to take the next steps toward achieving our vision of seamless interoperable communications at the local, regional, state and federal levels.

Over the past year members of the KWIEC Public Safety Working Group have worked with state and local public safety personnel to develop this plan. Through this collaborative effort, the Kentucky SCIP reflects new and innovative methods to achieve our interoperability goals moving forward for years to come.

The KWIEC Public Safety Working Group recognizes the challenges that lie before us and all public safety officials regarding interoperability issues. The Commonwealth of Kentucky remains diligent in our efforts to make certain that every first responder and public safety agency has the appropriate communications equipment, support, and training to ensure the Commonwealth is ready and prepared.

Sincerely,

Derek Nesselrode
Statewide Interoperability Coordinator
Commonwealth of Kentucky

Introduction

For decades, the lack of adequate and reliable wireless communications systems has been an issue plaguing public safety organizations. In many cases, agencies could not perform their mission-critical duties. These agencies were unable to share vital voice and data information with each other and neighboring jurisdictions in daily operations and in emergency response to incidents, including natural disasters and acts of terrorism.

First responders routinely face dangerous situations and successful operations in these environments require not only rigorous training, strong incident command, but functioning technology and a well-managed flow of information. A high degree of situational awareness helps to increase responder safety and improve incident management. Interoperability is crucial to ensuring a continued flow of information among public safety personnel both in crises and non-crisis situations. Every day, first responders need answers to questions: *What do we know about the scene? Who or what, am I dealing with? Are there victims?*

As this plan will show, Kentucky has made significant investments in achieving communications interoperability for all first responders and public safety agencies. Kentucky's Voice Mutual Aid project provides common channels in each frequency band that all first responders- local, state, and federal- can access and use during an emergency. In 2006, Governor Ernie Fletcher committed to upgrade all basic and non-enhanced 9-1-1 centers in the Commonwealth. Since 2004, Kentucky has improved radio systems and coverage footprint areas in order to provide first responders more reliable interoperable communications. As well, Kentucky has begun the process of overhauling its existing microwave communications backbone, the Kentucky Emergency Warning System (KEWS).

The Commonwealth has established a Regional Planning Committee called the Public Safety Working Group which is responsible for evaluating and making recommendations to the KWIEC. They are also responsible for frequency planning and coordination of the 700 and 800 MHz frequency bands and the group works closely with the Federal Communications Commission and neighboring states. This group is currently evaluating the use of wideband, IP based, and trunked communications networks for use in this new spectrum. Kentucky has seven neighboring states and due to the complexities of frequency and planning coordination, the final implementation plan must be complex and comprehensive. While it is too early to release a completed and approved 700 MHz plan, efforts are well underway in evaluating the potential of the various systems- alone and in concert with our existing infrastructure. A completed plan is expected to be released within the next twelve months. Kentucky has built a solid foundation, but there is more work to be done. Outlined in this plan are four near-term initiatives and two long-term initiatives. Each builds on our current environment and leverages our current progress and benefits all first responder agencies as well as pertinent non-governmental organizations (NGOs), i.e., The Center for Rural Development. Kentucky has no federally recognized tribes, and as such, this plan does not address any tribal entities.

Kentucky is committed to ensuring that this plan is a living document. The Statewide Plan will undergo an annual review by the Kentucky Wireless Interoperability Executive

Committee (KWIEC) under the direction of the State Interoperability Coordinator. A Statewide Plan progress report will be a standing agenda item at each quarterly KWIEC meeting. The State Interoperability Coordinator or his/her designee will be responsible for providing the quarterly report to the KWIEC.

State Interoperability Coordinator

The establishment and implementation of the statewide public safety interoperability plan is the responsibility of the executive director of the Commonwealth Office of Technology. A dedicated state interoperability coordinator has also been assigned and shall act as the primary point of contact for all state interoperability efforts.

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Strategy

Strategic Vision

Kentucky will implement a strategy that requires identifying a baseline of public safety communications across the Commonwealth, leveraging existing efforts to improve communications and interoperability, and building a backbone that enhances interoperability state-wide. This strategy includes an effective governance structure, a comprehensive outreach capability, and the successful completion of key strategic initiatives, while keeping an accurate "scorecard" to measure progress. The goal of this strategy is to significantly improve public safety communications and interoperability across the Commonwealth.

This strategy includes eight near-term initiatives and seven long-term initiatives.

Near-Term Initiatives:

- *Enhance state Voice Mutual Aid system*
- *Complete the KEWS upgrade*
- *Streamline 911 dispatch services*
- *Implement Strategic Technology Reserve – Mobile Communications Centers*
- *Complete Statewide Communications Inventory*
- *Sync the state EOP with the SCIP*
- *Conduct Statewide COML training*
- *Address the FCC Narrowbanding mandate*

Long-Term Initiatives:

- *Build a state-wide public safety communications and interoperability infrastructure:*
- *Achieve close to 100 % statewide coverage for state-owned voice and data communication*
- *Public Safety Wireless Broadband Solution*
- *Satellite Communications capabilities*
- *Establish Interoperable Communications Exercise protocols*
- *Integrate the communications inventory into the GIS database*
- *Complete emergency power upgrades to the remaining KEWS sites*

These initiatives are based upon recommendations by public safety practitioners throughout the Commonwealth, and are interrelated. Therefore, they must all be completed to effectively and efficiently improve public safety communications and interoperability. The failure to complete any one initiative will inherently lead to the failure of the strategy.

Coordination with Neighboring States

Kentucky has solid working relationships with its contiguous states on myriad initiatives to include interoperability. Three of our northern counties (Boone, Kenton, and Campbell) are included in Cincinnati's UASI area and coordinate as such on regional voice and data

interoperable requirements and issues. Kentucky also participates on a multi-state consortium related to communications interoperability. To ensure that our plan includes strategic coordination with our contiguous states, Kentucky will leverage these existing partnerships and groups as appropriate.

Catastrophic Loss

Kentucky currently has in place a strategy for addressing catastrophic loss of communication assets. The Department of Military Affairs' Kentucky National Guard and the Division of Emergency Management along with their volunteer's Civil Air Patrol (CAP), Amateur Radio Emergency Services (ARES) and Military Affiliate Radio (MARS) have planned, trained and exercised a New Madrid earthquake scenario annually for the last 17 years. Every exercise presumes that the KEWS network is not available for the first 3 days; however, restoral is expected to far less than three days with the completion of the new network. By plan, elements of the National Guard will deploy within 6 hours after a major event to assess disaster damage for the Emergency Operations Center (EOC).

To provide emergency communications with the loss of all or part of the KEWS network, all Department of Military Affairs Radio Communications System (DMARCS) VHF Repeaters default to repeater mode allowing for local communications around that repeater. In addition to the 53 statewide DMARCS repeater sites, DMARCS includes VHF Base Stations at 52 Armories and Kentucky Emergency Management (KYEM) Offices across the Commonwealth. Kentucky has also tested the use of airborne portable repeaters to conduct voice communications between the EOC and far Western Kentucky.

The National Guard, Kentucky Emergency Management, Kentucky State Police, Department of Public Health, Kentucky Transportation Cabinet, and larger metropolitan police agencies have mobile command vehicles equipped (from basic to extensive) with wireless communications systems and were designed to support the incident commander, local government and the EOC with satellite data and interoperable voice communications. (See Appendix: A for more detail on the Department of Military Affairs Capabilities for Emergency Communications). Kentucky will adjust their current strategy to take advantage of the planned implementation of multiple and regional mobile command vehicles to support our current, near-term and long-term initiatives.

NRP and NIMS Compliance

Kentucky is incorporating the five key principles of the Response Doctrine into their Statewide Plan. These principles are:

- Engaged partnership
- Tiered response
- Scalable, flexible and adaptable operational capability
- Unity of effort through unified command
- Readiness to act

As well, Kentucky is emphasizing that the Capability Building Model be applied to our overall response planning and the key components of that plan to include voice and data interoperability.

NIMS Implementation was endorsed by the Governor in an Executive Order dated December 7, 2004 establishing NIMS as the state standard for incident management. Full NIMS implementation is a dynamic multi-year phased process with important linkages to the National Response Plan / National Response Framework.

NIMS will enable responders at all levels to work together more effectively to manage domestic incidents no matter what the cause, size or complexity. The benefits of the NIMS implementation are significant: Standardized organizational structures, processes and procedures; standards for planning, training, exercising, and personnel qualification standards; equipment acquisition and certification standards; interoperable communications processes, procedures and systems; information management systems; and supporting technologies – voice and data communications systems, information systems, data display systems and specialized technologies.

Transit Systems

Kentucky currently has data interoperability with CSX Railroad (the Network Operations Workstation system) and is still in the process of developing a strategy to address communications interoperability with other major transit systems, bus service providers, ports and other rail operations.

Kentucky Overview

Geography

From elevations of about 2,000 ft (610 m) on the Cumberland Plateau in the southeast, where Black Mt. (4,145 ft/1,263 m) marks the state's highest point, Kentucky slopes to elevations of less than 800 ft (244 m) along the western rim. The narrow valleys and sharp ridges of the mountain region are noted for forests of giant hardwoods. To the west, the plateau breaks in a series of escarpments, bordering a narrow plains region interrupted by many single conical peaks called knobs. Surrounded by the knobs region on the south, west, and east and extending as far west as Louisville is the Bluegrass Country; the heart and trademark of the state.

To the south and west lie the rolling plains and rocky hillsides of the Pennyroyal. There, underground streams have washed through limestone to form miles of subterranean passages, some of the notable ones being in Mammoth Cave National Park.

Northwest Kentucky is generally rough, rolling terrain, with scattered but important coal deposits. The isolated far-western region, bounded by the Mississippi, Ohio, and Tennessee rivers, is referred to as the Purchase, or Jackson Purchase (for Andrew Jackson, who was a prominent member of the commission that bought it from the Chickasaw in 1818). Consisting of floodplains and rolling uplands, it is among the largest migratory bird flyways in the United States.

Rivers are an important feature of Kentucky geography. The Ohio River forms the entire northern boundary of the state, flowing generally south west below Covington, until it joins the Mississippi River west of Paducah. At the southwest tip of the state about 5 sq mi (13 sq km) of Kentucky territory, created by a double hairpin turn in the Mississippi River, protrudes north from Tennessee into Missouri and is entirely separate from the rest of the state. In the east, the Big Sandy River and its tributary, the Tug Fork, form the boundary with West Virginia. Many rapid creeks in the Cumberland Mountains feed the Kentucky, the Cumberland, and the Licking rivers, which, together with the Tennessee and the Ohio, are the chief rivers of the state. The Kentucky Dam on the Tennessee River near Paducah is a major part of the Tennessee Valley Authority system.

Population

Kentucky has a current population of 4,173,405 citizens. By 2010, Kentucky's population is expected increase by approximately 3 percent.

Distribution of Population (2006)

Figure 1: 2006 KY Population Distribution

Distribution of Population Change (2006 - 2010)

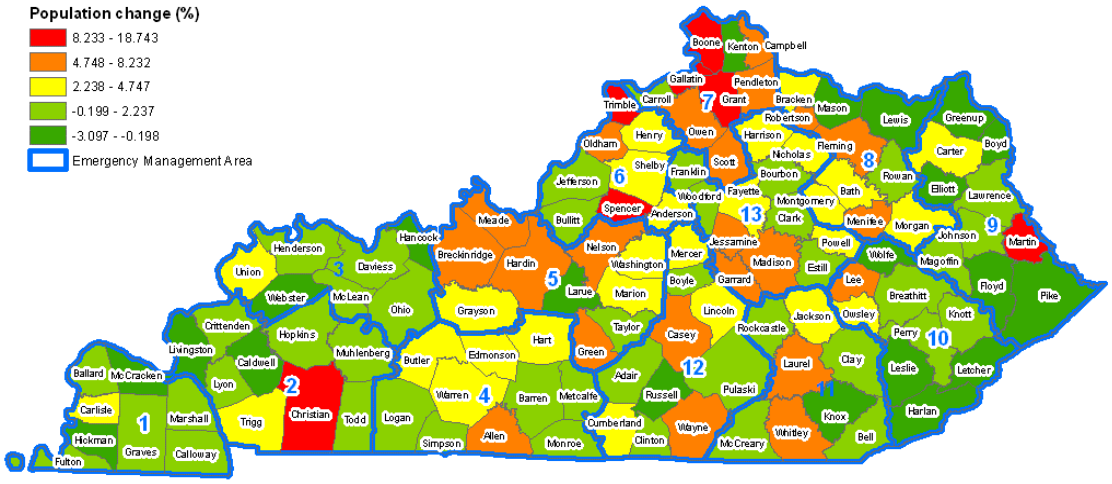


Figure 2: KY Population Change

Emergency Response Agencies

Kentucky has over 33,000 first responders. There are approximately 430 police departments ranging from urban forces with over 1,000 officers to small and rural agencies averaging 1 to 5 officers. In total, Kentucky has approximately 8,800 sworn law enforcement officers. Kentucky has 51 paid fire departments, 49 that are a combination paid and volunteer, and 768 fully volunteer. Fire department personnel totals include 4159 full time paid, 568 part time paid, and 19,729 volunteers. Kentucky EMS is comprised of 225 ground ambulance providers, 84 are private/industrial owned versus 141 government owned (state, city, local). There are also 12 corporate owned air medical services servicing the Commonwealth.

Kentucky 911 Centers

Kentucky has 98 certified 911 centers with 16 of those being located at the regionally dispersed Kentucky State Police Posts. Each county, with the exception of Owsley, Robertson, and Grant has a 911 center. Several counties have multiple 911 centers which brings the total of certified and non-certified 911 centers to over 100 across the Commonwealth. Currently, 17 counties still provide basic 911 services but each is preparing to move to enhanced servicing over the course of the next year.

Division of Emergency Management

The Kentucky Division of Emergency Management (KYEM) consists of the main office located at the Boone National Guard Center in Frankfort, KY and 11 Regional Offices located throughout the state. Under KRS 39A.050, the KYEM is responsible for the development and operation of the state Emergency Operations Center (EOC) and its associated Emergency Communications Center (ECC). As well, the KYEM is responsible for the state emergency response plan that includes a communications annex outlining specific situations and assumptions related to communications during an emergency or disaster. The communications mission is to provide a rapid and efficient means of communications during routine and emergency situations.

The KYEM primary communications facility, the ECC, is located at the EOC building, Boone Center, Frankfort, KY. Each KYEM Area Office acts as a communications extension of the state EOC and has radio and telephone capabilities. The following voice radio communication systems are available in the ECC:

- **DMARCS:** This is a Department of Military Affairs statewide VHF high band two-way radio system. It consists of 53 repeater sites primarily located at KEWS and KET antenna sites. In addition to the repeater station at the ECC, KYEM Area Offices and all National Guard Armories have a base station to conduct local operations. The ECC is the control point for this net.
- **Military Affiliate Radio System (MARS):** This system provides backup support for military communication channels.
- **Kentucky Emergency Warning System (KEWS):** This is a microwave system that provides control links and channels for state agencies to operate and control their voice radio systems

- **Kentucky Educational Television (KET):** This system provides statewide voice and video communications from fixed or mobile points.
- **Amateur Radio:** This system provides state backup voice base and mobile communication. Amateur radio operators, when requested, staff a fully equipped radio shack at the ECC for the state and worldwide communications.
- **Federal Emergency Management Agency National Radio System (FNARS):** This system provides voice, teletype, or Morse code between the state ECC and the National Federal Regional Center (FRC).
- **Department of Public Health (Satellite):** This system provides a statewide push to talk voice network. It operates without the need for land based repeaters or infrastructure.

Kentucky State Police

The Kentucky State Police is organized pursuant to KRS 16.040 and KRS 16.060. These statutes give the Commissioner of the Kentucky State Police the responsibility for organizing the agency. The Kentucky State Police is organized into three separate divisions: The Administrative Division, the Operations Division and the Technical Services Division. The Kentucky State Police employs approximately 950 sworn personnel.

Voice and data communications fall under the Technical Services Division under the command of Director Lt. Colonel Bradley D. Bates The Division of Technical Services coordinates and manages activities of the Criminal Identification & Records Branch, as well as the Communications & Computer Technologies, Intelligence, and Headquarters Communications Center Branches. The Division of Technical Services is under the command of Major Keith Peercy, who also serves as the Chief Information Officer (CIO) of the Kentucky State Police.

The CIO directs and coordinates the development and operation of computer related systems for the agency; conduct cost analyses for computer hardware, software and vendor services; provide guidance for short and long-range planning for all technological related needs; and provide representation for the agency on various evaluation groups.

The Kentucky State Police operates a Motorola multi-channel 450 MHz digital and 150 MHz radio system. While the 16 KSP Posts function as dispatch centers for their respective districts, the KSP Head Quarters Communications Center (HQ CC) can broadcast statewide. For example, the KSP HQ CC currently handles state-wide dispatch for the Kentucky Vehicle Enforcement (the state's Commercial Vehicle enforcement and regulatory agency.)

It is the KSP network that Kentucky plans to leverage for expanded and enhanced interoperable communications.

Department of Fish & Wildlife Resources

The Kentucky Department of Fish and Wildlife Resources operates a statewide 150 MHz radio system that is dispatched centrally from its Head Quarters in Frankfort, Ky.

Department for Public Health

The Kentucky Department for Public Health (KDPH) operates a Communications-based satellite radio network at over 350 locations across the state. Units are primarily housed a healthcare facilities (hospitals and health departments) though in regions outside population centers, devices are in place with local dispatch centers, EMS agencies, and county-level Emergency Management agencies. Devices are also located at the State Emergency Operations Center, KYEM Mobile Command Vehicle, KDPH Operations Center, Kentucky Regional Poison Control Center, and at least one KSP Post. While the system is operated as a multi-channel radio network, the devices also function as a satellite telephone with common ten-digit dialing. The entire system is intended to be a backup voice communications system, though some counties and regions have found that regular use is required for users to retain proficiency.

Louisville Metro / MetroSafe

Louisville Metro has an MSA population of over 1,200,000 citizens and over 3,700 emergency first responders from 30 agencies and several jurisdictions within 385 square miles inside Jefferson County including approximately 2000 law enforcement personnel. The surrounding MSA includes (9 KY and 4 IN Counties) with a combined area of 4000 square miles. Louisville is in the final phases of the construction of an 800 MHz digital P25 12-site, 24 channels, simulcast, public safety radio system. The new system now includes ITAC/ICALL channels with state of the art bridging technology to provide additional interoperability. In addition to the new system Louisville Metro plans to retain some of their VHF and UHF systems in order to be backward compatible with outside agencies not operating on 800MHz. The new radio system is fully redundant with no single point of failure. MetroSafe houses all public safety and public service communications dispatch staff with the communications center. A fully redundant backup center can be operational within 60 minutes.

Northern, Kentucky

Northern Kentucky has about 700 law enforcement officers spread out over 27 different agencies. They operate on 8 different primary frequencies all in the UHF range. Secondary channels are limited as some agencies have acquired low wattage split channels in the 12.5 range to conduct limited car to car communications. The fire departments consist of about 23 agencies with roughly 1000 fire and EMS personnel. All fire and EMS operations are conducted in the VHF range with limited to no interoperability with police and fire. The Airport conducts all operations on a trunked 800 system as does Campbell County for secondary voice and data communications.

Within the last year Northern KY dispatch centers (five total) have been linked via microwave and using Motobridge technology and are able to link UHF and VHF frequencies on a limited bases -limited because of the lack of channels in which to conduct tactical or prolonged operations. We have to link our primary frequencies, which in turn shuts down all other operations on those channels. Tests of the state mutual aid system have proven to be unsuccessful and therefore many agencies have not programmed those frequencies into their radios.

Most of the radio infrastructure in Northern Kentucky is 1968 technology installed in 1971. Although equipment has overtime been replaced as things wore out, the basic technology is more than 40 years old.

Lexington, Kentucky

Lexington-Fayette County, an urban area is centrally located in the Commonwealth. The recent addition of Frankfort, Franklin County, and Scott County to their response regions increases their total service population from 270,000 to nearly 700,000. The Divisions of Fire, Police, and 25 Fayette County DES agencies , which includes all receiving hospitals, DEEM, public utilities, The Red Cross, etc., utilize an Ma-Com 800 MHz radio system. The University of Kentucky and the Veterans Administration also use this system as does Northern Kentucky and the Northern Kentucky Airport. The Lexington Division of Police currently has authorized 540 sworn personnel and more than 230 civilian personnel and uses a 150 MHz system that is not interoperable with any other response organizations except when using one of the state Mutual Aid frequencies. The 800 MHz system has limited coverage due to a need for a minimum of at least 2 additional towers.

Critical Infrastructure

Kentucky's local communities are the lifeblood of the state. Kentucky's 120 counties support the state's widespread critical infrastructure which features two major international airports, the production of a large portion of the region's electricity, key interstate highways that run through more than two-thirds of Kentucky's counties, and several large shipping hubs. Kentucky's communities are also home to a number of chemical refineries, dams, and waterway shipping ports.

Kentucky has 120 top priority sites, 50 priority sites, and 70 secondary priority sites. Jefferson, our most populous county and one of two Metropolitan Service Areas (MSAs), is home to top priority sector sites to include: Chemical, Chemical and Hazardous Materials Industry, Dams, Postal and Shipping, Special Event (local), Special Event (national), Special Event and Commercial Asset, and Transportation. Kentucky's second MSA, Fayette County, has multiple top priority sectors, to include: Food and Agriculture, Special Event (local), Special Event (national), and Transportation. The U.S. Enrichment Corp-DOE Diffusion Plant is located in McCracken County and Madison County is home to the Bluegrass Army Depot and Fort Knox is located in Meade County. Other critical infrastructure sectors in the Commonwealth include: Government Facilities, Energy, Healthcare, Water, and Defense Industry Base.

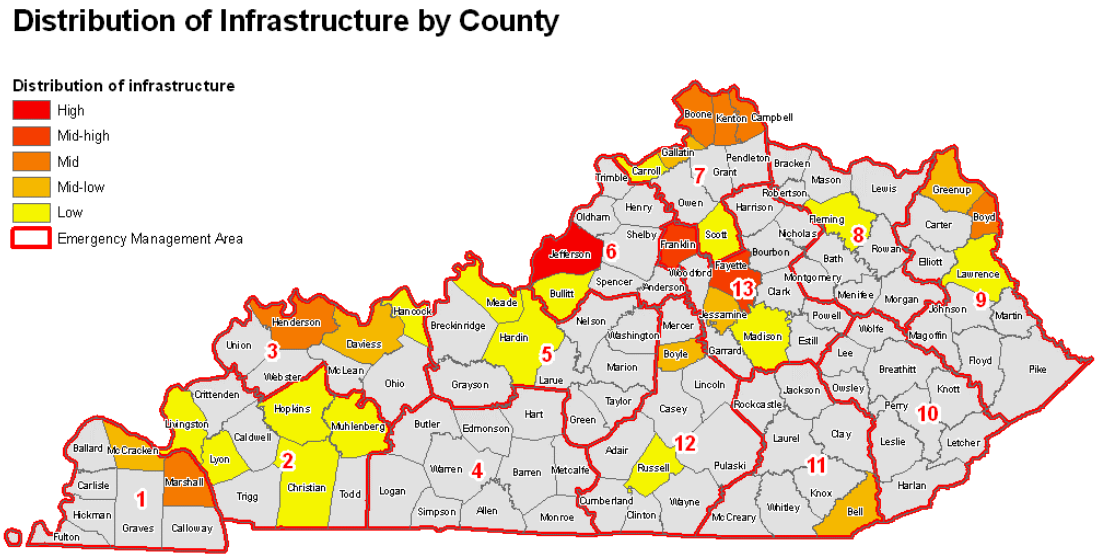


Figure 3: Critical Infrastructures

Risk

Kentucky possesses many susceptibilities that make it vulnerable to acts of terrorism, natural disasters and/or other catastrophic events. For example, Louisville Metro is bisected by three major interstates- I-65, I-64, and I-71. I-64 and I-65 cross the Ohio River into Louisville as do two major rail bridges. I-65 through Louisville varies in rank as the first or second in volume for interstate transport of hazardous materials in the United States. The Port of Louisville is the 50th busiest port by tonnage in the county with commodities transported that are identified in the National Planning Scenarios. Louisville is home to "Rubbertown," an industrial complex noted for its history of chemical production. Rubbertown is a frequent site of hazardous materials spills and leaks (65 incidents in 2006). Travel and tourism is the third largest industry in Louisville. In 2006, they hosted approximately one million conventioneers; this in addition to hosting two of the largest public gatherings in the United States, "Thunder Over Louisville" and the Kentucky Derby.

Lexington is home to several notable skyscrapers, famed horse farms, and is crossed by two major interstates, I-64 and I-75. On a daily basis, over 70,000 commercial vehicles travel through Kentucky - a majority on one of these two interstates. Of significant note is that Lexington is hosting the 2010 World Equestrian Games, the International Olympics of the horse industry.

The Wolf Creek Dam is located on the Cumberland River near Somerset in Russell County. It generates hydroelectricity, relieves or limits flooding, and the lake it creates serves as a popular recreation and tourist attraction. Current seepage problems in the dam's foundation have placed this dam as one of the government's top priorities for repair. Its failure in a planned attack or natural disaster is a very real risk.

With respect to voice and data communications, Kentucky Disaster planners estimate that a 6.8 or greater earthquake along the New Madrid Fault represents the greatest probability for the loss of KEWS connectivity and the resultant loss of public safety communications in much of western Kentucky. The KEWS towers were designed to withstand seismic activity but microwave dishes will be shaken out of alignment resulting in the widespread temporary loss communications. Earthquake damage modeling predicts outages of both voice and data for state systems immediately west of Elizabethtown, KY.

In addition to earthquakes, other natural hazards such as flooding, ice storms, and tornadoes are a threat to Kentucky.

Agency Planning

Initial data for Kentucky's Strategic Interoperability Plan was gathered from seven regional focus groups. The data was validated during a strategic planning session. The Office of the Governor, Kentucky Office of Homeland Security (KOHS) provided the leadership, coordination, and management of the statewide planning process. Over 300 members of Kentucky's public safety community were involved in the strategic planning process that is the basis for the development of the statewide plan.

The desired outcomes of the regional focus groups and final Strategic Planning session were:

- *Public safety's recommendations to Kentucky on how to improve voice and data communications across the Commonwealth*

- *An enhanced sense of community among statewide public safety practitioners in the Commonwe*alth

Each focus group session was designed as a series of conversations centered on the following five issues:

- Interoperability, state-wide and regional, as it relates to the "current state" or status of interoperability
- The case for why change needs to happen
- The envisioned future state
- Barriers to achieving the future state
- A strategy for moving forward, consisting of:
    - Short-term recommendations
    - Long-term recommendations

This figure provides a breakdown of stakeholder participation by discipline.

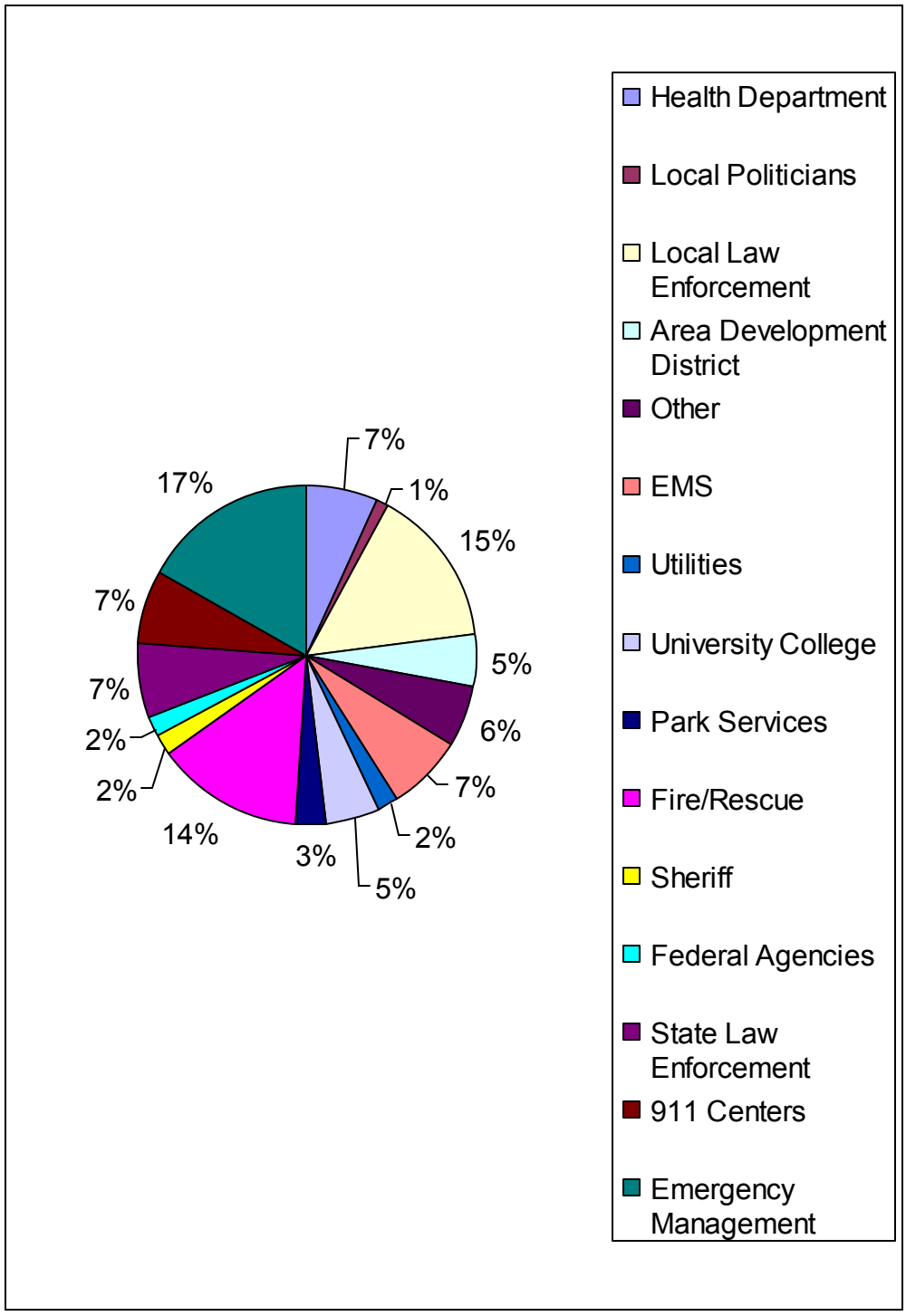


Figure 4: Participation by Discipline Interoperability Coordinator

Non-Governmental Organizations

Kentucky recognizes the need to further assess non-governmental organizations' interoperable communications abilities/needs and how they can be addressed in our state plan going forward, as applicable. However, for several years Kentucky has partnered closely with the Center for Rural Development, a non-profit organization whose primary mission is improving the quality of life for individuals in its forty-two county service region by providing leadership that stimulates innovative and sustainable economic development solutions. The Center is represented on the KWIEC and also participated in our regional planning sessions and state plan development. The Center has also piloted various communications technologies for the state.

The Center for Rural Development

Kentucky recognizes the need to further assess non-governmental organizations' interoperable communications abilities/needs and how they can be addressed in our state plan going forward, as applicable. For several years Kentucky has partnered closely with the Center for Rural Development, a non-profit organization whose primary mission is improving the quality of life for individuals in its forty-two county service region by providing leadership that stimulates innovative and sustainable economic development solutions. The Center is represented on the KWIEC and holds a position on the Public Safety Working Group. The Center has participated in regional planning sessions and state plan development. The Center has also played a significant role in piloting new technologies under consideration by the Commonwealth.

The Center is the host agency for the Rural Law Enforcement Technology Center (RULETC) located in Hazard. RULETC is a specialty center in the U.S. Department of Justice's National Institute of Justice National Law Enforcement and Corrections Technology Center system. RULETC's primary focus is on assisting small and rural agencies across the nation by improving their capacity to serve their constituencies. This is accomplished through conference hosting, technical assistance, facilitating multi-jurisdictional efforts to share resources and address problem on a regional basis.

The Center has access to many resources within NIJ including the Communications Center of Excellence which focuses on testing and evaluating emerging communication trends and technologies.

Current Communications Environment

Kentucky's current communications and interoperability environment has two primary components: voice communications interoperability and data communications interoperability.

Voice Interoperability: Mutual Aid

Public Safety Agencies across the Commonwealth primarily operate in three frequency bands; 150, 450, and 800 MHz Frequency bands are defined as a grouping of frequencies that comprises the frequency spectrum used by a wireless public safety communication system. Since most radios do not have the capability to operate on different frequency bands, three mutual aid standards were implemented to cover each of the 150, 450, and 800 MHz bands. Currently, there are several mutual aid channels set aside by the Commonwealth and the FCC in the 150, 450, and 800 MHz frequency bands. The mutual aid standard formalizes the wireless voice communication protocol necessary to achieve communication interoperability in each of those frequency bands within a Disaster Response / Coordination incident.

The following Mutual Aid Channels are set aside to operate in the 150, 450, and 800 MHz frequency bands while responding to a Disaster Response / Coordination incident. Public Safety voice communication equipment should have the corresponding frequencies pre-programmed into their communication equipment in order to establish on-scene voice communications interoperability.

VHF 150 MHz		
ID	**Direct**	**Use**
VMA	**155.4750 MHz**	**Call Channel**
VCALL	155.7525 MHz	
VTAC 1	151.1375 MHz	
VTAC 2	154.4525 MHz	
VTAC 3	158.7375 MHz	
VTAC 4	159.4725 MHz	
PL = 156.7		

UHF 450 MHz			
ID	**Transmit**	**Receive/Direct**	**Use**
UMA	458.300 MHz	453.300 MHz	Call Channel
PL=162.2			

800 MHz			
ID	**Transmit**	**Receive/Direct**	**Use**
ICALL	806.0125 MHz	851.0125 MHz	Primary Call Channel
ITAC 1	806.5125 MHz	851.5125 MHz	Police
ITAC 2	807.0125 MHz	852.0125 MHz	Fire
ITAC 3	807.5125 MHz	852.5125 MHz	EMS
ITAC 4	808.0125 MHz	852.5125 MHz	Command & Control
PL=156.7			

Figure 5: National Mutual Aid Channels used in Kentucky

This Mutual Aid plan also overcomes the technological barrier for radios to communicate on different frequency bands. Using a console-to-console patch technology allows radios operating within separate frequency bands to be "Patched" together allowing for communication interoperability. Kentucky is utilizing Motorola's Base Interface Module (BIM) solution for channel interconnects. The Kentucky State Police (KSP) Communications Branch provides 24/7 monitoring of Kentucky's Mutual Aid frequencies and manages any required frequency patching for all first responders as necessary and requested. Each of the sixteen regional KSP Posts has been trained in the use of the Mutual Aid channels and when and how to complete the channel interconnect. As well, Kentucky includes the use of Mutual Aid in its exercise program. All first responder agencies are required to sign a Memorandum of Understanding with the KSP that outlines the mutual aid technology and usage requirements. As part of the MOU, public safety agencies agree to the following usage procedures and requirements (See Appendix B for a copy of the Voice Mutual Aid MOU.)

- Continue to maintain their radio communication equipment to manufacturer and FCC specifications.
- Maintain reasonable security from loss or theft, and unauthorized use for all radio communication equipment operating on any KSP frequencies.
- Report immediately to the KSP any incident that causes loss of control of any radio communication equipment operating on any KSP Frequencies.
- Submit a list indicating the number, make, and model of each type of radio communication equipment that will be programmed with the Mutual Aid frequency. (example: 20 Motorola, ABC Handheld, 15 Kenwood, CDE, vehicle mounted, 2 GE, XYZ Base Stations)
- Enable circuitry in the radio communication equipment to prevent transmitter hang-on in excess of three minutes.
- Submit updates when new radio communication equipment programmed with the Mutual Aid frequency is brought into service and as old systems are retired.
- Use "Plain English"[1] for all voice transmissions.
- Refrain from "In-House" radio traffic not pertaining to a Mutual Aid and Disaster Response / Coordination incident.
- Notify the dispatcher as soon as frequency cross-connects are no longer required.
- Periodically check the Mutual Aid website for news, updates, and information.

[1] "Plain English" is clear language, in English, that can be understood without concerns of ambiguity. Jargon, 10 codes, acronyms, and agency specific terms or phrases will not be allowed.

Voice Mutual Aid is available to all 33,000 first responders providing multi-agency, multi-jurisdictional, regional and even federal voice interoperability. Kentucky is in the process of developing a plan to include non-governmental organizations.

Data Interoperability: KyWINS and KyWINS Messenger

Kentucky uses the Kentucky Wireless Information Network Service (KyWINS) as the primary wireless data infrastructure for first responders. Built using IPMobileNet 800 MHz as the standard, KyWINS leverages the existing 165 public access towers across the Commonwealth. The wireless speed is 19.2 Kbs. Any program using TCP/IP within the speed limitations will work on KyWINS.

The initial emphasis was on law enforcement and its use of the Law Enforcement Information Network of Kentucky (LINK)/NCIC system via the wireless state network. The law enforcement information is queried through the use of a variety of different mobile software interfaces such as Bio-Key Mobile Cop, New World, Premier MDC, and VisionTek. By using different mobile packages, the agencies were limited in their ability to communicate with other units via the KyWINS system. Additionally, non-law enforcement agencies do not have the same need for the mobile software since they do not perform LINK/NCIC checks.

To overcome these communication limitations, Kentucky developed an open-source messenger service that can be used by any public safety/first responder agency regardless of the type of mobile software it uses. Called KyWINS Messenger, this software package allows an individual agency to send instant messages to any other person or agency who has both the KyWINS Messenger software on their MDC and wireless access to the State's secure network. KyWINS also provides its users with the capability to create or join conferences of many users to share real time information between multiple individuals.

The Messenger software requires a central server to handle its traffic. The state has supplied this server and associated software which relieves each agency of its own investment in additional hardware. In order to use the KyWINS Messenger system, an agency needs only to obtain a free copy of the software and have each user sign a user agreement. The user agreement is kept at the agency level and is a tool to indicate the individual understands the security requirements of using the system.

Administrative functions for the KyWINS Messenger shall be the responsibility of the KSP. These functions include managing user names, system rights, maintaining proper system configuration, enabling and disabling system features, and recording and unloading archival files.

KyWINS and KyWINS Messenger are free to all agencies with no recurring costs for the agency to bear. All first responder agencies are required to sign a KyWINS MOU with the

KSP prior to being set up on the system. (See Appendix C for a copy of the KyWINS Messenger MOU[2])

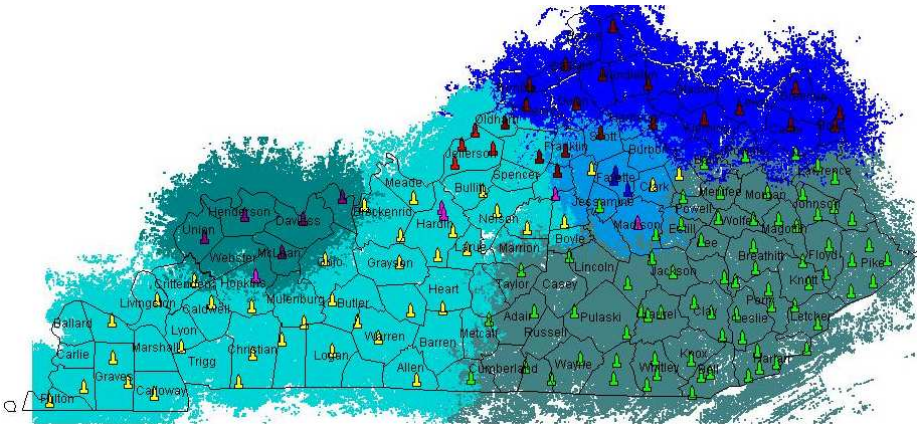


Figure 6: Propagation Map for KyWINS Data Network

Problem Definition

Kentucky has implemented a robust tactical solution for public safety voice communications interoperability. However, there are capacity limitations when utilizing mutual aid channels. In recognition of this challenge, Kentucky is in the process of upgrading its primary communication infrastructure from analogue to digital microwave. Kentucky has also identified as one of its long-term initiatives, to enhance the mutual aid system to increase channel capacity to provide for simultaneous channel talk abilities.

Kentucky also faces geographic challenges that limit the propagation of radio signals. Kentucky has 95 plus percent voice coverage across its primary and secondary roadways; however this percentage drops significantly along the tertiary rural roadways.

Completing the digitized microwave system will enhance bandwidth and signal propagation as well as provide an opportunity to increase channel capacity within the mutual aid channels.

In an effort to improve voice coverage, we will expand the footprint of the current tower infrastructure. Our primary goal will be to increase the number of towers in rural areas of the Commonwealth.

Tactical Interoperability Communications Plans

The Commonwealth of Kentucky currently has one formal Tactical Interoperable Communications (TIC) Plan. This TIC Plan was created for the Louisville, Kentucky Urban Area by the Louisville Urban Area Working Group (UAWG). The plan was completed in

[2] This system is at its maximum capacity and new users are not being added until broadband capacity is expanded

March 2006 with revisions published in August and December of 2006. The Louisville Urban Area is defined to include:

- Meade County
- Bullitt County
- Henry County
- Oldham County
- Clark County, IN
- Floyd County, IN
- Nelson County
- Shelby County
- Spencer County
- Trimble County
- Harrison County, IN
- Washington County, IN

The TIC Plan applies to the urban area as defined above. Specifically it is intended to be used by public safety during day-to-day and emergency response situations. These public safety disciplines include, but are not limited to:

- Law Enforcement
- Emergency Medical Services
- Public Safety Communications
- Homeland Security
- Public Health
- Health Care
- Military Affairs/National Guard/Reserve
- Fire Service
- HAZMAT
- Emergency Management
- Public Works
- Government Administration
- Federal and State Agencies
- US Coast Guard

The UAWG Communications Subcommittee has the responsibility to review the TIC Plan annually. Responsibilities of the Communications Subcommittee include:

- Establishing and managing interoperable communications working groups
- Maintaining and updating the TIC Plan
- Developing and recommending final solutions and implementations
- Establishing training recommendations in support of the TIC Plan
- Recommending chains of command for interoperable communications including training Communication Unit Leaders
- Developing and recommending Memoranda of Understanding and Sharing Agreements for interoperable communications
- Notifying agencies of regular interoperable equipment/solutions testing and assisting agencies with test evaluation and the dissemination of results
- Continual re-evaluation of regional requirements as technology evolves and circumstances dictate

The primary point of contact for questions regarding the TIC Plan is:

Gary Vance
Communication Services Supervisor/COML
502-574-2440
Gary.Vance@louisvilleky.gov

An alternate point of contact is:

Ron Pannell
Communication Services Manager
502-574-2440
Ron.Pannell@louisvilleky.gov

Long-Term Performance Measures

Two comprehensive and aggressive long-term performance measures have been developed to show the progress of the Commonwealth's interoperability effort. The performance measures will be used in tandem with the Interoperability Continuum along with the inventory database that will be completed in 2010 to assess the current state of interoperability in the Commonwealth.

Kentucky's long-term performance measures are:

- *The ability and effectiveness of local, regional, state, federal, non-profit and private entities to communicate with voice and data*
- *Coordination with state agencies' interoperable communication efforts*

Performance will be measured by:

- An annual update and maintenance of the interoperability inventory of local, regional, and statewide equipment, governance, along with standard operating procedures.
- An annual self-assessment based on the National Interoperability Continuum. The Interoperability Continuum is presented in the Figure below. For more information about the Continuum visit the SAFECOM program website at www.safecomprogram.gov.
- The baseline for both measures was established in 2007.

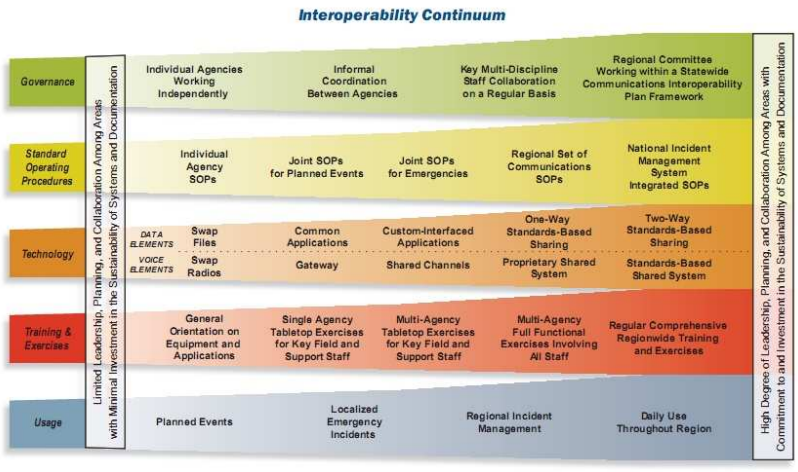


Figure 7: Interoperability Continuum

Interoperability Governance

Kentucky Wireless Interoperability Executive Committee

Legislative Authority for Kentucky Wireless Interoperability Executive Committee

In the 2003 General Session of the Kentucky General Assembly, House Bill 309 created the KWIEC made up of state and local members. The purpose and content of HB309 was to include local first responder agencies in the strategic planning process, to adopt a nationally recognized title for the group, and to provide a statutory annual reporting requirement to the Kentucky Legislature.

In an effort to further the mission and objectives of the KWIEC, House Bill 226 was introduced to the 2004 General Session. The legislation with House Committee Substitute was passed and signed into law by Governor Ernie Fletcher and amends KRS 11.5162 to expand the definitions of "frequency," "interoperability," and "standards," create definitions for "public safety shared infrastructure" and "primary wireless public safety voice or data communications systems"; and excludes "911" telephone systems from the definition of "primary wireless public safety voice or data communications systems."

In 2009, SB 181 was passed by the General Assembly and signed into law by Governor Steve Beshear. With the passage of SB 181, several statutes were repealed and reenacted. As it pertains to the KWIEC the following occurred:

- KRS 11.5161 was repealed and reenacted as KRS 42.734 without change to content.
- KRS 11.5162 was repealed and reenacted as KRS 42.736 without change to content.
- KRS 11.5163 was repealed and reenacted as KRS 42.738 with the following changes.
    - The membership of the KWIEC was reduced to 20 members.
    - The position of the Director of 911 was eliminated as a voting member of the board. (*The KWIEC has requested that this position be restored*)

Overview of KWIEC Governance Structure

The Kentucky Wireless Interoperability Executive Committee serves as the advisory board for all wireless communications strategies presented by agencies of the Commonwealth and local governments. All State agencies in the Commonwealth shall present all project plans for primary wireless public safety voice or data communications systems for review and recommendation by the committee, and the committee shall forward the plans to the Chief

Information Officer for final approval. Local government entities shall present project plans for primary wireless public safety voice or data communications systems for review and recommendation by the Kentucky Wireless Interoperability Executive Committee.

The Committee:

- Offers a nationally recognized name and structure as recommended by the Federal Communications Commission.

- Offers more involvement from interested agencies with the addition of local representatives from municipal and county government, police, fire, sheriff, EMS, and a 911 dispatch representative.

- Establishes a reporting mechanism whereby the Chief Information Officer of the Commonwealth Office of Technology shall report by September 15 annually to the Interim Joint Committee on Seniors, Veterans, Military Affairs, and Public Protection and the Interim Joint Committee on State Government on progress and activity by agencies of the Commonwealth to comply with standards to achieve public safety communications interoperability.

- Addresses communications interoperability, a homeland security issue critical to the ability of public safety first responders to communicate with each other by radio.

- Advises and make recommendations to the Chief Information Officer of the Commonwealth regarding strategic wireless initiatives to achieve public safety voice and data communications interoperability.

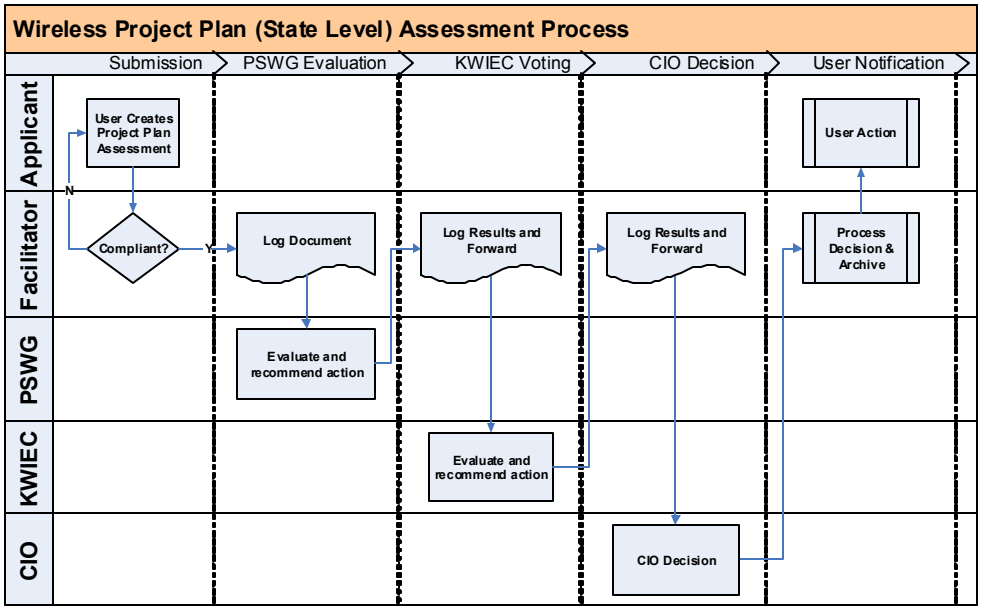


Figure 8: KWIEC Assessment Process

KWIEC Membership

The Kentucky Wireless Interoperability Executive Committee shall consist of twenty-one (20) members as follows:

- A person knowledgeable in the field of wireless communications appointed by the chief information officer who shall serve as chair;
- The executive director of the Office for Infrastructure Services, Governor's Office for Technology;
- The executive director of Kentucky Educational Television, or the executive director's designee;
- The chief information officer of the Transportation Cabinet;
- The chief information officer of the Justice Cabinet;
- The chief information officer of the Kentucky State Police;
- The commissioner of the Department of Fish and Wildlife Resources, Commerce Cabinet, or the commissioner's designee;
- The chief information officer of the Natural Resources and Environmental Protection Cabinet;
- The director of the Department of Emergency Management, Department of Military Affairs;
- The executive director of the Kentucky Office of Homeland Security;
- The chief information officer, Department for Public Health, Cabinet for Health Services;
- A representative from an institution of postsecondary education appointed by the Governor from a list of three (3) names submitted by the president of the Council on Postsecondary Education;
- The executive director of the Center for Rural Development, or the executive director's designee;
- A representative from a municipal government to be appointed by the Governor from a list of three (3) names submitted by the Kentucky League of Cities;
- A representative from a county government to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Counties;
- A representative from a municipal police department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Chiefs of Police;
- A representative from a local fire department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Association of Fire Chiefs;
- A representative from a county sheriff's department to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Sheriffs' Association;
- A representative from a local Emergency Medical Services agency to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Board of Emergency Medical Services;
- A representative from a local 911 dispatch center to be appointed by the Governor from a list of three (3) names submitted by the Kentucky Chapter of the National

Emergency Number Association/Association of Public Safety Communications Officials.

KWIEC Members

The following table lists the current KWIEC members.

Name	Agency/Position
Jim Barnhart	Chair
Steve Rucker	Commonwealth Office of Technology
Michael Harris	Kentucky Educational Television
Jon Clark	Transportation Cabinet
Don Pendleton	Justice Cabinet
COL Brad Bates	Kentucky State Police
Robert Milligan	Fish & Wildlife Resources
Ken Jorette	Environmental and Public Protection
COL Rodney Hayes	Division of Emergency Management
Mary Pedersen	Kentucky Office of Homeland Security
Rodney Murphy	Cabinet for Health & Family Services
Pamela Collins	Postsecondary Education
Lonnie Lawson	Center for Rural Development
Rebecca Hopkins	Municipal Government
Steve Cornish	County Government
Mike Ward	Municipal Police
<UNFILLED>	Local Fire Department
Wayne Wright	County Sheriff
Charles O' Neal	Local EMS
Stephen Mitchell	Local 911 Dispatch Center

Figure 9: KWIEC Members

KWIEC Meeting Schedule

The KWIEC meets quarterly and is open to the public. For more information on KWIEC, go to www.KWIEC.ky.gov.

The Public Safety Working Group (PSWG)

The Public Safety Working Group was created by KRS 42.738 which states *"9) The Public Safety Working Group is hereby created for the primary purpose of fostering cooperation, planning, and development of the public safety frequency spectrum as regulated by the Federal Communications Commission, including the 700 MHz public safety band. The group shall endeavor to bring about a seamless, coordinated, and integrated public safety communications network for the safe, effective, and efficient protection of life and property. The Public Safety Working Group membership and other working group memberships deemed necessary shall be appointed by the chair of the Kentucky Wireless Interoperability Executive Committee."*

The KWIEC has tasked the PSWG with additional responsibilities which are outlined in the PSWG bylaws. Currently these additional responsibilities include:

a. Evaluate new technology and technical solutions to planned projects
b. Using the SCIP as a source, create a long term plan which makes the eventual voice and data convergence of technology a priority
c. Publish recommended minimum requirements for all radio systems
d. Maintain an inventory of State radio assets
e. Conduct an annual review of State radio infrastructures
f. Recommend projects to the KWIEC
g. Conduct an annual review of the SCIP, make recommendations for changes, and provide a report back to the KWIEC
h. Provide periodic briefings to the KWIEC as required

PSWG Members

The Public Safety Working Group will be staffed by a minimum of five members from various agencies. All members, including the chair, will have a background in wireless communications and must understand the various engineering and technical challenges associated with the group's responsibilities and requirements as outlined in KRS 42.738(9).

Position	Name	Agency
Chair	Derek Nesselrode	Kentucky State Police
Co-chair	Bob Stephens	Kentucky Emergency Management
Member	Dave Barker	Department of Military Affairs
Member	Danny Ball	The Center for Rural Development
Member	Ron Pannell	Louisville Metro/UASI
Member	Drew Chandler	Department for Public Health
Member	Jeff Mitchell	Kentucky Emergency Warning System

Figure 10: PSWG Members

PSWG Meeting Schedule

The PSWG meets monthly. For more information on the PSWG refer to the KWIEC website www.kwiec.ky.gov .

MetroSafe: Louisville-Metro

As an organization, MetroSafe is a joint operation to consolidate communications for 911, the Louisville Metro Police Department, Louisville Fire and Rescue, Local Government Radio, and Louisville Metro Emergency Medical Services. In addition, MetroSafe will offer interoperability for all remaining 911 PSAPS, Jefferson County Sheriff's Office, suburban city agencies within Louisville Metro as well as the 13 surrounding counties in Kentucky and Indiana.

Goals and objectives of MetroSafe include, but are not limited to:

- Create a modern communications infrastructure and information exchange infrastructure to improve the safety of the citizens and first responders of Louisville Metro
- Promote partnering between public safety and service agencies
- Consolidate communications for former suburban and urban fire, police, local government radio, and emergency medical services in a single facility using common voice and data infrastructure
- Design, acquire and implement a new Louisville Metro-wide wireless and mobile radio infrastructure to support public safety and emergency communications

MetroSafe is responsible for acquiring a facility; developing and implementing adequate infrastructure to support voice, wireless and data communications; implementing proper security; and acquiring and implementing public safety applications to support consolidated communications and public safety interoperability.

While MetroSafe is the governing body for interoperability and other public safety initiatives for Louisville-Metro, all projects related to voice and data interoperability are subject to the review and approval of the KWIEC.

The Executive Sponsor of MetroSafe is Louisville Mayor, Jerry Abramson. The Executive Director is Doug Hamilton.

Governance Board members are:

Name	Position
Kim Allen	Public Protection Department
Col. Robert White, Chief	Louisville Metro Police
Col. Gregory Frederick, Chief	Louisville Fire & Rescue
Col. Paul Barth	Suburban Fire Protection Districts
Neal Richmond	Louisville Metro EMS
Michael Brown	Emergency Management, EOC
Chief Rick Sanders	Jeffersontown PSAP
Thomas Hewitt	Anchorage PSAP
Ralph Miller, Jr.	Shively PSAP
Chief Norman Mayer	St. Matthews PSAP
Sheriff John Aubry	Jefferson County Sheriff PSAP

Beth Niblock	Louisville Metro CIO
Ted Pullen	Public Works and Assets
Stan Mullen	Jefferson County Public Schools
Tom Campbell	Metro Corrections
Wayne Hall	University of Louisville

Figure 11: MetroSafe Governance Board members

Multi-jurisdictional and Multi-disciplinary agreements

The Commonwealth has developed multiple memorandum of understanding related to the use of various communication systems. These MOUs cover use of the Voice Mutual Aid system, KyWINS, and KyWINS Messenger. Any public safety agency utilizing one or more of the above-referenced systems are required to sign the pertinent MOU with the Kentucky State Police. The KWIEC provides programmatic support for the dissemination and tracking of signed MOUs.

There are also multiple local and regional multi-jurisdictional and disciplinary agreements in place in the Commonwealth. The city of Louisville has MOUs with the City of Cincinnati and the City of Indianapolis for all aspects of mutual aid. They also have agreements with Emergency Management, and the City of Lexington, KY for the same. Each agreement clearly states that the assisting party shall operate under the command, control, and supervision of the appropriate responsible officials of the party confronting the emergency. Under these agreements, all responding agencies will comply with approved SOPs relating to any and all interoperable communication systems.

Currently the Lexington Division of Police maintains MOUs with the following agencies without concurrent jurisdiction:

- Bluegrass Airport Division of Police
- Bourbon County Sheriff
- Civil Air Patrol/KY Wing
- Clark County Sheriff
- Division of Enhanced 9-1-1
- Eastern Kentucky University Division of Police
- Fayette County Public Schools Law Enforcement
- Fayette County Sheriff
- Frankfort Police Department
- Kentucky Intelligence Fusion Center
- Georgetown Police
- Louisville Metro Police
- Jessamine County Sheriff
- Madison County Sheriff
- Nicholasville Police
- Paris Police
- Richmond Police

- Scott County Sheriff
- Transylvania University Department of Police
- University of Kentucky Police
- Versailles Police
- Winchester Police
- Woodford County Sheriff

Each MOU focuses on assistance in the event of an emergency with additional manpower and equipment. Voice and data interoperability is a critical component in each MOU.

Near-Term Initiatives

Near Term Initiatives

Enhance Voice Mutual Aid System

Kentucky has implemented a fairly robust Voice Mutual Aid solution that provides intra- and inter-channel connect capabilities for the three public safety frequencies, 150 MHz, 450 MHz, and 800 MHz. Currently, the Mutual Aid solution provides five channels within the 150 MHz and 800 MHz frequency bands. The UHF is in progress. The system should be able to accommodate most multi-jurisdictional emergency voice communication needs; however, in a large scale event such as the September 11th attack or Hurricane Katrina, mutual aid channels can quickly become overloaded. Understanding that interoperable communications can be limited, Kentucky integrated the National Incident Management System (NIMS) into the standard operating procedures for Voice Mutual Aid. While this should mitigate to eliminate a majority of possible overload situations, Kentucky recognizes an opportunity to further decrease the probability of channel overload.

Kentucky will enhance the current Mutual Aid System to provide for additional infrastructure for added channel capacity within the existing mutual aid frequency bands. By providing this channel capacity, Kentucky will be better prepared for large-scale multi-jurisdictional, multi-state, and national incidents man-made or natural. Kentucky also recognizes the need to ensure day-to-day operability and will continue to work with local agencies to identify funding for new radios and other communications equipment.

Kentucky will also utilize its statewide inventory to identify older radio systems for replacement, to include mobiles, portables, and base radios. This initiative also includes the implementation of dedicated 700 MHz mutual aid and interoperability frequencies to provide to any agency who intends to use it. Kentucky will deploy base stations where needed that have the same inter-channel patching capability as the UHF/VHF/800 system.

Plans are underway to fill the coverage gaps of the VHF and 800 MHz systems and to expand the channel capabilities of the UHF system by adding additional repeaters.

Complete KEWS Upgrade

KEWS, an analogue microwave communications network spanning the Commonwealth, is being upgraded to a digital system. The KEWS system has performed well for over thirty years, but due to its age, a lack of spare parts and advancements in technology, an effort is underway to modernize it.

The Commonwealth Office of Technology (COT) is in the process of upgrading the network to full digital capacity. Digital radio equipment is being installed while generators and existing facilities are being upgraded to meet Kentucky's voice and data communication needs for the next 25 plus years.

The primary goal of the upgrade is to deliver a multi-service network that supports existing time-division multiplexing (TDM)-based voice, data and video services, while providing for growth and integration of future internet protocol (IP) based communication services. The network will be scalable and allow for significant growth, while optimizing the utilization of network resources and advanced technologies.

Key milestones for the Western half of the state include:

- Civil work is expected to be completed in Q2 of 2010
- Equipment installation is expected to be completed in Q4 of 2010
- Testing and circuit cuts is expected to be completed by Q1 of 2011

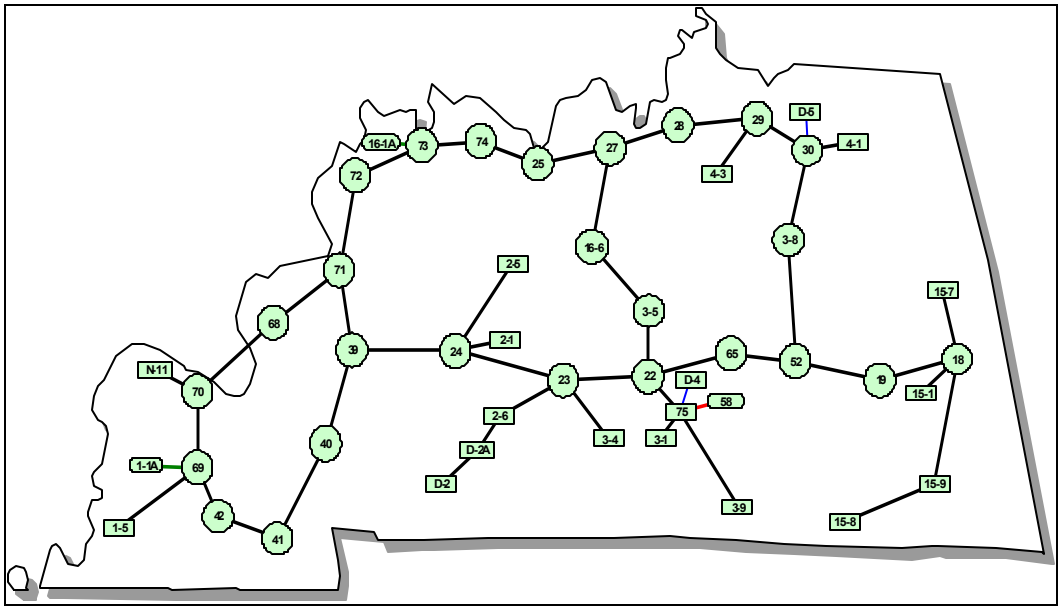


Figure 12: KEWS West

Key milestones completed for the Eastern half of the state include:

- Civil work, which encompasses; electric, grounding, tower modifications, shelter replacements, etc.
- Installation of digital microwave radios, antennas, and data equipment
- Testing on both radio and data equipment
- KEWS data traffic is currently operating on the new network
- KEWS voice traffic cutover is scheduled to completed in Q2 of 2010

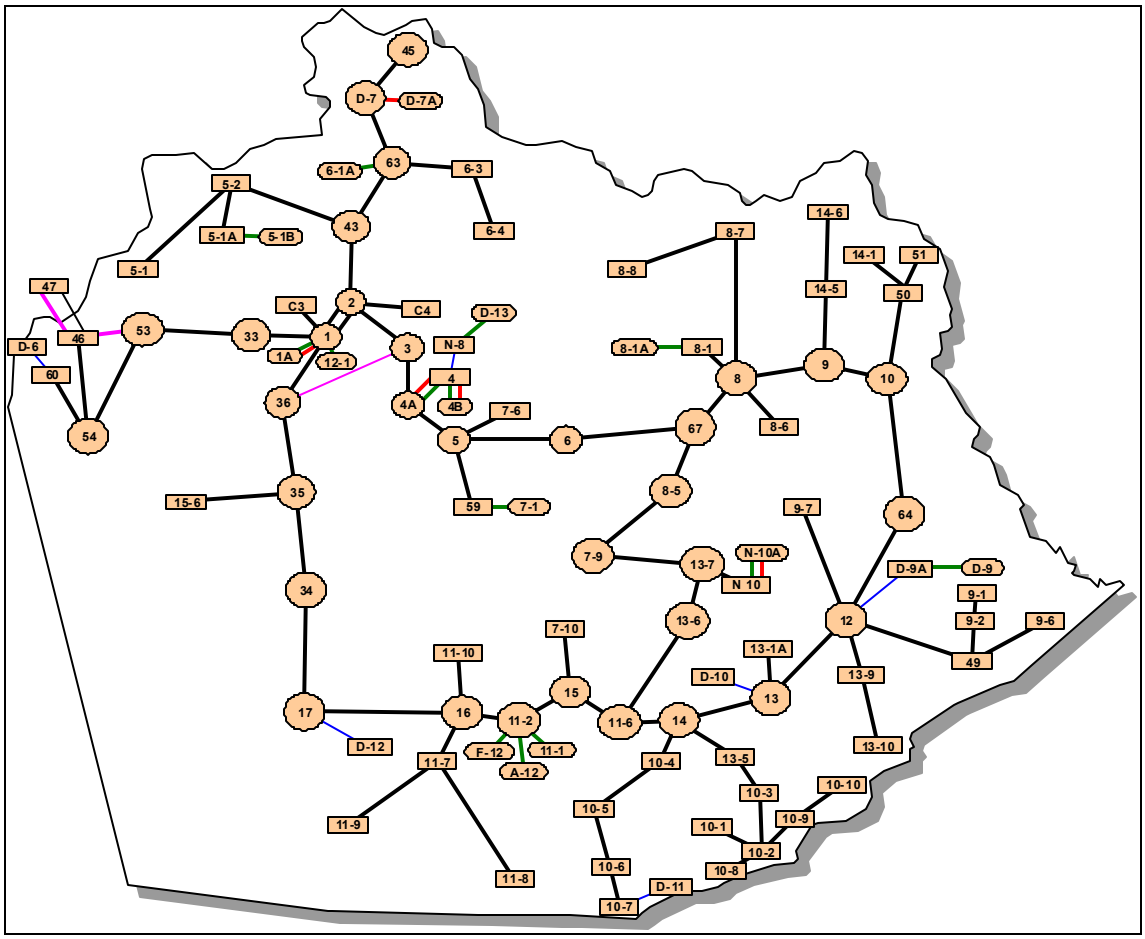


Figure 13: KEWS East

Streamline 911 Dispatch Services

Public safety practitioners across Kentucky identified a need to streamline 911 dispatch centers by region to provide more efficient and effective dispatching services. The Office of the 911 Coordinator and the Kentucky Office of Homeland Security to which it is attached are undertaking an aggressive plan to create a state-wide 911 system. The project calls for placement of IP based 911 hardware and software that will facilitate easy networking of Kentucky's PSAPSs to regional hubs (hosts). This provides an opportunity for many PSAPs to save on mileage line costs to reach selective routers. It allows for network redundancy throughout the Commonwealth, aids in the establishment of disaster recovery plans, and features next generation 911 technology.

HB656 passed by the 2006 Kentucky General Assembly removed financial disincentives identified previously in the Kentucky State-Wide Strategic Plan for Communications and Interoperability. Dispatch centers that are Phase 11 certified by the Kentucky Commercial Mobile Radio System (CMRS) Board can now continue to receive their current allocation of funds even after the merger of 911 dispatch services. In addition, the legislation created a grant fund, part of which provides funds that aid in consolidation. The fund is also designed to assist any remaining basic 911 dispatch centers to become enhanced.

Key milestones for this initiative include:

- Install selective routers in each of the sixteen Kentucky State Police Posts across the Commonwealth.
- Local Public Safety Answering Points (PSAPs) begin to connect to the selective routers.
- Connect selective routers utilizing the Kentucky Emergency Warning System Digital Microwave network.
- Install a second selective router in each Kentucky State Police Posts providing redundancy and greater capacity.
- All PSAPs become networked across Kentucky.

Strategic Technology Resources/Reserves

Kentucky currently has four state-owned mobile command vehicles that are equipped with various types of communications equipment. The communications vehicles assigned to the National Guard and Emergency Management are equipped with wireless communications systems to include multiple DMARCS voice radios with interoperability provided by multiple radios and JPS 1000 switches. Both vehicles have robust satellite internet capability with VPN services provided back to the EOC for VoIP telephones, GIS, EOC situational awareness and full time video teleconferencing capability using PolyCom equipment. The National Guard vehicle has a compliment of military radios for interoperability with their ground and aviation units. The KyEM vehicle has a fully equipped Amateur Radio "shack" that is fully interoperable with many public safety voice systems.

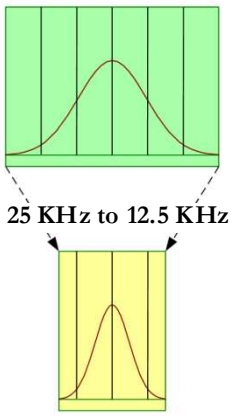
The Kentucky State Police units, while functional, are outdated and require upgrades in order to provide the necessary voice and data interoperability required during times of major disasters and emergencies.

Kentucky's plan for implementing strategic technology resources is focused on mobile reserves. Kentucky has a need for multiple mobile communications centers that can be quickly deployed as needed. As such, Kentucky will implement six new Mobile Communication Centers (MCC) that will be strategically pre-positioned across the state to provide regional response and support. To maximize use of the MCCs, Kentucky will conduct regional exercises of losing critical communications to develop the MCC placement strategy. The mobile command vehicles currently managed by the KSP will require upgrades to the voice and data communications systems. The MCCs will use a combination of mobile repeater systems for Mutual Aid, radio frequency patching technology and wireless data. The MCCs will be able to provide direct voice communications with multiple agencies to include public safety, public utilities, and The Red Cross, for example. Disparate communications systems can be added as needed with caches of programmable radios and patching technology on each MCC.

FCC Narrowbanding Mandate

In the past, agencies were assigned channels with a bandwidth of 25 KHz for their wireless requirements. The 25 KHz bandwidth was considered the minimum acceptable bandwidth at the time it was issued and certainly worked well for the transmissions systems in use at the time. Newer technologies have since reduced the requirement for wideband voice transmissions to less than half of what was previously required and 12.5 KHz channels have been the norm for many years. The older 25 KHz legacy channel assignments are called "wideband" channels to differentiate them from the newer 12.5 KHz "narrowband" assignments.

Over the years, the Federal Communications Commission (FCC) has opened new frequency bands as demand for frequencies grew. This demand has and will continue to outpace availability. With the limitations on frequency, it became necessary to reconsider the usage of existing frequencies. To this end, where previously both wideband and narrowband channels have been available, the Federal Communications Commission has decided to eliminate the space hogging wideband channels in use today in frequency bands below 512 MHz . Simply put, each 25 KHz voice channel's bandwidth below 512 MHz is being narrowed to a 12.5 KHz channel. Of course this does not simply mean that users can recover two narrowband channels from a single wideband channel since the actual licensing and allocation process[3] is more complicated.



This FCC mandate is called the narrowband conversion or narrow banding and its completion has been mandated to occur by 2013. This narrow banding mandate is expected to be the most important issue on the table for the next two years.

This FCC decision will require any Kentucky Public Safety Agency still using wideband channels to decommission those older radio systems and purchase newer systems. Noncompliance is not an option and anyone found using wideband channels after the 2013 deadline will be in violation of the FCC mandate which can result in fines or loss of their license.

With a large portion of the first responders using older wideband VHF frequencies, it can be seen that this mandate has huge ramifications for the state. It is certainly one of the most important challenges that Kentucky is facing over the next two years.

[3] The final channel plan depends on several factors including channel type (voice/data, exclusive use, shared, or adjacent to shared), channel location in the spectrum, and other factors.

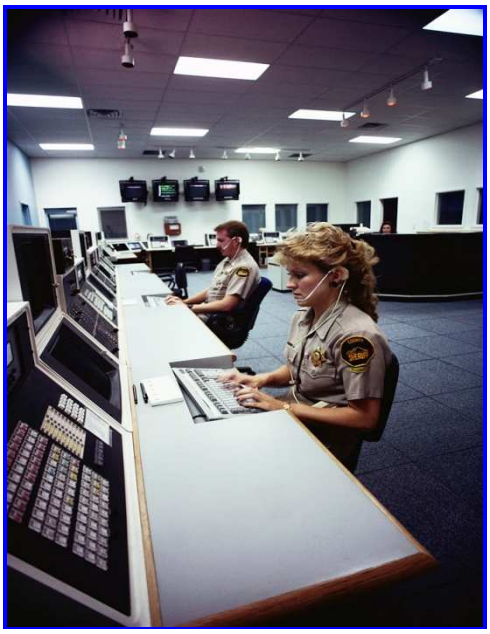
Long-Term Initiatives

Long-Term Initiatives

Overview

One solution will not solve all interoperability issues in Kentucky. To achieve state-wide public safety communications and interoperability, Kentucky will design, approve, and build a multi-faceted, open-platform, as appropriate, infrastructure for voice and data communications. This self-healing state-wide communications network must be available for day-to-day operational use as well in emergency situations. The system must allow all public safety responders the ability to communicate with whom they need in real-time, on-demand, and as authorized.

Kentucky has elected to take a two-phased approach for the long-term plan. Each phase builds upon and/or complements its current and near-term communications and interoperability environment.



Achieve Close to 100 Percent Statewide Coverage

The need for basic communications within public safety agencies is equally as critical as interoperability. Public safety practitioners throughout Kentucky must be able to communicate directly with their own personnel, as well as with neighboring agencies. The Commonwealth will address this issue with basic public safety communications to achieve state-wide coverage.

Key Milestones for this initiative include:

- Identify the baseline of state-wide communications: Inventory frequencies, towers, and radio assets – Documented all tower locations, frequencies, and state agency radio assets. Local communication asset inventory in progress by the KOHS and the KSP. This inventory will include locally owned infrastructure as well as radios, gateways, radio caches and other interoperable equipment. – In progress
- Expand coverage by improving and constructing infrastructure state-wide: Inventory, categorize, and prioritize dead spots- In progress
- Establish nearly 100 percent Enhanced 911 (e911) coverage state-wide: Identify coverage gaps and prioritize as necessary – In progress

Wireless Broadband

Several wireless broadband solutions will be evaluated by the PSWG for the purpose of augmenting and eventually replacing the IPMobileNet system. The systems reviewed must provide wireless data over long distances, provide multiple simultaneous accesses, be secure, and allow users to access the system without physically connecting to anything.

The Kentucky wireless broadband initiative will include deploying wireless broadband using the KEWS digital microwave network. Each broadband site should use the existing KEWS tower and should deploy a minimum of three 120 degree antennae units. Initially, they will operate in the 4.9 GHz spectrum with possible migration to the 700 MHz spectrum as it becomes available. This is a unique spectrum. It is unlicensed, so the Commonwealth will not have to manage frequency acquisition, however, it is restricted for use by public safety. Hence, we will not have interference by non-first responders. Estimated range will be roughly a +/- 5 mile radius from the tower, depending on line of site, terrain and the usual constraints of wireless. At close ranges, less than a mile, with line of site, one could reasonably expect to connect at over 5mbs. At the extended ranges, users should be able to transfer 1mbs.

This solution is currently based on fixed technology. However, with the NetMotion[4] solution, a public safety vehicle will be able to move through the coverage area of any individual BTS and maintain a connection. This hardware is upgradeable to the newer broadband technologies at a future time, should it be deemed a requirement. This upgrade would allow better roaming from tower to tower and sector to sector. The highest bandwidth and speed will be available at the highest population centers.

The broadband solution selected will augment and eventually replace the current IPMobileNet solution as Kentucky's primary public safety data network in metro areas. IPMobileNet will be sustained for use as a secondary network in rural areas and the more deeply penetrated areas and as the primary network for public safety agencies outside of the wireless broadband net.

[4] NetMotion is a hardware/software package that allows seamless handoff of mobile systems across sites as they travel.

Project Implementation Timeline

Submit SCIP for Federal Review	**Complete**
SCIP review by new administration	**Complete**
Establish Action Planning Committee	**Complete**
Complete Statewide Communications Inventory	**In Progress**
Prioritized Action Plan complete	**Complete**
Enhance Voice Mutual Aid System:	**In Progress**
Louisville Mutual Aid/Redundant Controller	**Complete**
Establish nearly 100% Enhanced 9-1-1 coverage:	**In Progress**
Complete KEWS Upgrade:	
• **East Civil Work**	**Complete**
• **East Equipment**	**Complete**
• **West Civil Work**	**In Progress**
• **West Equipment**	**In Progress**
Annual SCIP Review:	**In Progress**
Streamline 9-1-1 Dispatch Services:	**In Progress**
Implement Strategic Technology Resources:	**In Progress**
Wireless Broadband:	**TBD**

Planning Methodology

Planning Methodology

Statewide Plan Development

Kentucky, with the SAFECOM program, designed a strategic planning process that gathered local public safety perspectives through regional focus group sessions. This process drew from ongoing best practices of other states, and leveraged existing local, regional, state, and federal interoperability initiatives and resources in Kentucky. Representatives from the following organizations were invited to participate in this process.

- Local Government
- Local Fire and Rescue
- Local Law Enforcement Agencies
- Local Sheriffs' Departments
- Emergency Medical Services
- Private Ambulance Services
- Kentucky State Police
- Area Development Districts
- Kentucky Vehicle Enforcement
- Department of Fish and Wildlife
- Center for Rural Development
- Department of Public Health
- Department of Park Services
- Department of Public Works
- Federal Bureau of Investigation
- Hospitals
- Kentucky National Guard
- Kentucky Universities
- School Districts
- United States Coast Guard
- United States Department of Homeland Security
- Division of Emergency Management

In early 2007, Kentucky established a working group consisting of members of the KWIEC, key local stakeholders and the Kentucky Office of Homeland Security (KOHS) to draft the plan based on the SAFECOM methodology. The plan and any revisions or enhancements are subject to the review and approval of the KWIEC with oversight by the State Interoperability Coordinator.

SCIP Annual Review

The milestones for the 2010 annual review and approval process of this document are as follows:

November 2009	– Workgroup Review and revisions
December 2009	– KWIEC Review and revisions
January 2010	– Publish revised and updated 2010 SCIP

The first milestone has been met and the annual review of the SCIP was conducted in November 2009 by the workgroup listed below.

Mary Pedersen	- KWIEC Member	mary.pedersen@ky.gov
Derek Nesselrode	- Interoperability Coordinator	derek.nesselrode@ky.gov
Chuck Miller	- KWIEC Facilitator	charlesr.miller@ky.gov
Bob Stephens	- PSWG	bob.stephens@usarmy.mil
Jeff Mitchell	- PSWG	jeff.mitchell@ky.gov
Danny Ball	- PSWG	dball@centertech.com
Ron Pannell	- PSWG	Ron.Pannell@louisvilleky.gov

Review and comments were also provided to the SCIP review group by the Public Safety Working Group members.

David Barker, CW4 (NGKY)	david.barker@ng.army.mil
Drew Chandler (CHFS DPH EPB)	drew.chandler@ky.gov

The next annual review will be scheduled by the KWIEC for late 2010 for the 2011 review cycle.

State Planning Regions *(not used by all agencies)*

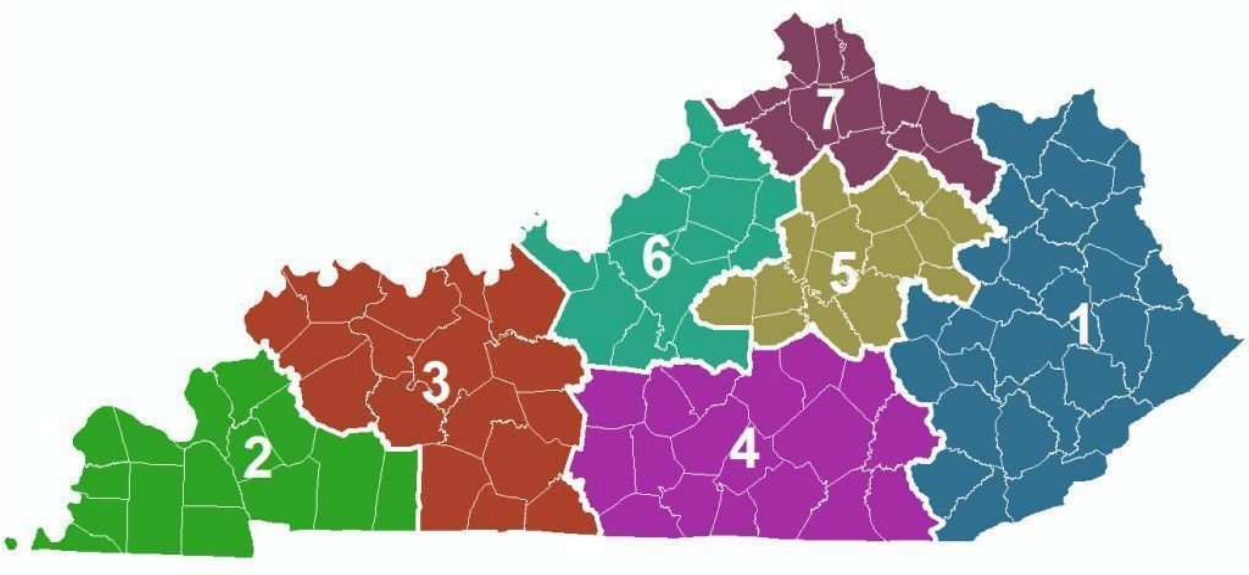


Figure 14: State Planning Regions

REGION 1

- Bell County
- Boyd County
- Breathitt County
- Carter County
- Clay County
- Elliot County
- Estill County
- Floyd County
- Greenup County
- Harlan County
- Jackson County
- Johnson County
- Knott County
- Knox County
- Lawrence County
- Lee County
- Leslie County
- Letcher County
- Lewis County
- Magoffin County
- Martin County
- Menifee County
- Morgan County
- Owsley County
- Perry County
- Pike County
- Rowan County
- Wolfe County

REGION 2

- Ballard County
- Caldwell County
- Calloway County
- Carlisle County
- Christian County
- Crittenden County
- Fulton County
- Graves County
- Hickman County
- Livingston County
- Lyon County
- Marshall County
- McCracken County
- Todd County
- Trigg County

REGION 3

- Allen County
- Breckinridge County
- Hancock County
- Henderson County
- Ohio County
- Simpson County

- Butler County
- Daviess County
- Edmonson County
- Grayson County
- Hopkins County
- Logan County
- McLean County
- Muhlenberg County
- Union County
- Warren County
- Webster County

REGION 4

- Adair County
- Barren County
- Casey County
- Clinton County
- Cumberland County
- Green County
- Hart County
- Laurel County
- Lincoln County
- McCreary County
- Metcalfe County
- Monroe County
- Pulaski County
- Rockcastle County
- Russell County
- Taylor County
- Wayne County
- Whitley County

REGION 5

- Bath County
- Bourbon County
- Boyle County
- Clark County
- Fayette County
- Garrard County
- Jessamine County
- Madison County
- Mercer County
- Montgomery County
- Nicholas County
- Powell County
- Scott County
- Washington County
- Woodford County

REGION 6

- Anderson County
- Bullitt County
- Franklin County
- Hardin County
- Henry County
- Jefferson County
- LaRue County
- Marion County
- Meade County
- Nelson County
- Oldham County
- Shelby County
- Spencer County
- Trimble County

REGION 7

- Boone County
- Bracken County
- Campbell County
- Carroll County
- Fleming County
- Gallatin County
- Grant County
- Harrison County
- Kenton County
- Mason County
- Owen County
- Pendleton County
- Robertson County

Maintaining Local Input and Support

Kentucky has a proven track record of inclusive meritocracy with respect to the development and implementation of strategies, plans and initiatives relating to public safety. Kentucky recognizes the importance of soliciting local level input and understanding the diversity of local requirements during the planning process and, as such, has multi-jurisdictional and multi-disciplinary local representation on the KWIEC and other project teams implementing state-wide interoperability technologies.

In late 2006 and early 2007, the KOHS conducted a series- seven total- of regional law enforcement technology seminars. These seminars provided a forum for local agencies to view new technologies and to provide input related to their particular needs and opportunities for improvement. KOHS plans to conduct similar seminars on an annual basis and develop an on-line mechanism to capture issues, recommendations, successes, and challenges at the local level. The information will be presented to the KWIEC and incorporated into the State Plan and KWIEC goals as appropriate.

In further recognition of this need to maintain local input and support, the KWIEC built local outreach into its 2007 strategic goals and will work closely with KOHS and other state agencies to encourage local participation in on-going interoperability planning.

Incorporation of TIC Plans

Based on the overall applicability to a statewide strategy, Kentucky has incorporated multiple goals and objectives of Louisville, Kentucky Urban Area's TIC Plan into its plan. Two of the applicable goals and objectives include:

- Promote interagency cooperation in public safety and public service joint projects and initiatives

- Ensure a continuous availability of critical services

Kentucky also reviewed Louisville's Tactical Interoperable Communications Scorecard for best practices and lessons learned that were applicable to the statewide strategy. Key recommendations that are incorporated into this plan include:

- Ensure all regional communications interoperability SOP's are distributed to participating agencies
- Regularly practice/exercise SOP's to increase proficiency in use of these policies (e.g., minimize use of patched channels to maximize channel resources by maintaining a clear command and control structure
- Add communications interoperability as a component of all future exercises
- Test and exercise the activation and use procedures for the state strategic technology reserve and local radio caches

In addition to the primary POC for this document, the below listed individual is an alternate contact person for the TICP.

Michael G. Brown
Louisville/Jefferson County Emergency Management Agency
410 South 5th Street
Louisville, KY 40202
Telephone: (502) 572-3456
FAX: (502) 572-3498
michaelg.brown@louisvilleky.gov
http://www.louisvilleky.gov/EMA

Technology and Standard Operating Procedures

Technology and Standard Operating Procedures

Statewide Capabilities Assessment

The Kentucky State Police holds the vast majority of FCC licenses for the Commonwealth state agencies. They also act as the FCC coordinator for local public safety agencies. As such, the KSP has access to all frequency and transmitter information for the Commonwealth.

The KSP also collects radio system information as part of the MOU for use of the Voice Mutual Aid system. A plan is in place to put this information into the Communications Asset Survey and Mapping tool (CASM). This Data Base System is a resource management tool sponsored by the Office of Emergency Communications. CASM will improve the SWIC's ability to manage communication resources across the public safety community and to develop and mitigate any required migration strategies.

Current state agency voice environment:

Kentucky State Police:

Infrastructure

198 UHF P25 repeaters (day to day voice operations)
417 UHF Analog repeaters (Mutual Aid Voice)
53 VHF Analog base stations (Mutual Aid Voice)
32 800 MHz Analog repeaters (Mutual Aid Voice)
164 800 MHz Data Only (Mobile Data System)
32 UHF Desktop Base Radios

Dispatch Centers

17 KSP Post Dispatch Centers with 75 consoles

Mobile Command Posts

3 mobile command posts

Kentucky Department of Military Affairs / Kentucky Emergency Management / Kentucky National Guard:

Infrastructure

53 VHF (LOW 139-142) P25 repeaters
46 VHF (Low 139-142) P-25 base stations
60 VHF P25 Mobiles
170 VHF P25 Portables
25 UHF P25 Portables
25 MDC (data modems)

Dispatch Centers

EOC/ECC Frankfort 5 POS consoles

Mobile Command Posts

2 mobile command posts
2 JISECS Mobile Communications Networks

Kentucky Department of Parks:

Infrastructure

40 Desktop UHF Base Stations
80 UHF Mobiles
80 UHF Portables

Kentucky Department of Fish and Wildlife

Infrastructure

36 VHF Analog repeaters
225 VHF Mobiles
500 VHF Portables

Dispatch Centers

Central Fish and Wildlife Dispatch, Frankfort

Kentucky Transportation Cabinet

Infrastructure

36 VHF Repeaters
200 VHF desktop base radios
3250 VHF Mobiles
1000 VHF Portables

Dispatch

Transportation Operations Center (co-located with KSP HQ Dispatch), Frankfort

Kentucky Department of Corrections

Infrastructure

7 UHF Repeaters (State Reformatories)
15 UHF Desktop Base r=Radios
75 UHF Mobiles
850 UHG Portables

Kentucky Department of Forestry

Infrastructure

47 VHF Analog Repeaters
20 VHF Desktop Base Radios
413 VHF Mobiles
360 VHF Portables

Kentucky Department for Public Health

Infrastructure

368 Mobile Satellite Radios
12 800 MHz Portable Radios
3 800 MHz Mobiles
1 800 MHz Desktop Base
28 VHF Portables

6 VHF Mobiles
1 VHF Desktop Base

Other

3 Man-portable WiFi hotspots with Mesh capability
3 Portable ACU-minis
1 Transportable Very-Small Aperture Terminal (VSAT)

Detailed frequency data for Kentucky Public Safety agencies, state and local, is maintained and managed by the Kentucky State Police, Communications Division. The primary point of contact for state-wide voice communications infrastructure and asset information is:

Derek Nesselrode
Communications Director
Kentucky State Police
502-227-8750
Derek.Nesselrode@ky.gov

The completion of the baseline of state-owned communications assets, to include type of system, manufacture, summary of capabilities, and prepositioned locations of deployable radio systems is expected to be complete by mid to late 2010.

Legacy System Support

As part of the previously referenced Voice Mutual Aid initiative, Kentucky replaced a thirty year old legacy voice infrastructure. Prior to implementation, the KWIEC reviewed the plan to ensure functionality of the system on older radio systems across the Commonwealth. For example, existing KEWS customers will be transitioned to the new digital microwave system with no additional changes to their equipment.

Kentucky will continue to leverage the KWIEC and other resources to ensure that all legacy systems can operate on newly implemented platforms and that upgrade or replacement plans are incorporated into any communication and interoperability plans. As well, the Kentucky Office of Homeland Security having primary responsibility for communications interoperability within the Commonwealth will regularly convene representatives from all major communications infrastructure support units to assess the status of legacy systems. This assessment will include the remaining system lifetime, operational effectiveness, interoperability with other systems- legacy, newly implemented and planned- and replacement/migration plans.

The State Plan will be updated, as appropriate, based on findings and recommendations from this group. As noted, any modifications to the plan will require review and approval by the KWIEC.

Migration Plan

Kentucky has a great deal of experience in the migration from legacy systems to newer and/or state-of-the-art systems. We have comprehensive implementation, enhancement, and version control protocols in place to ensure seamless migrations with limited to no impact to end users.

Our Near- and Long-Term Initiatives will each undergo a rigorous review by the KWIEC, KOHS, and other subject matter experts, as necessary and required. All immediate and downstream impacts will be identified and mitigated or eliminated as part of our overall migration strategy. Our goal is to ensure a seamless cutover with zero migration incidents.

Kentucky's migration method will be a straightforward approach to implementing state requirements while addressing the known constraints. The migration plan will organize, control, and communicate the extensive number of tasks, schedules, technical details, and node-by-node conversion details using the selected migration method as its cornerstone. It is noted that a successful migration plan must also provide the flexibility and robustness necessary to handle the unforeseen changes that will occur over the multi-year migration period. Kentucky's baseline network provides a solid structural underpinning for the development of the formal migration plan.

Purchase Compliance

All state and local agencies are required to submit a project assessment that will aid the KWIEC with reviewing and make recommendations regarding project plans for primary wireless public safety voice or data communications systems. It will also aid the Chief Information Officer and Interoperability Coordinator in making a determination of whether state and local agencies' project plans meet the architecture and standards for primary wireless public safety voice or data communications systems.

The KWIEC review process ensures that agency purchases comply with the statewide plan, but also allows and encourages existing equipment to remain in place or be redistributed based on need to serve out its useful life.

Standard Operating Procedures

Standard Operating Procedures (SOPs) for the interoperable voice system will be approved by the KWIEC. All aspects from creation to development and maintenance shall be overseen by a subcommittee of KWIEC. Before being approved by the KWIEC, all SOPs will be reviewed by Kentucky's NIMS compliance officer to ensure the Commonwealth is compliant with all NIMS mandates with regards to interoperable communications during emergency management scenarios. Individual, local or state radio system SOPs are not subject to review by the KWIEC. However, any procedures relating to the bridging these disparate systems in the event of a regional or statewide emergency are subject to KWIEC review and approval.

- As users are added to the system--state or local--they will be required to sign an MOU stating they agree to abide by the SOPs.

- The KWIEC subcommittee will be given responsibility to review and update the SOPs on an annual basis.

- Any participant on the state system who does not sign or abide by the SOPs will be declared to be ineligible to receive homeland security grant funds from the KOHS.

- Ensure SOPs are readily made available to any and all pertinent agencies or NGOs.

Currently, with exception of the Cincinnati UASI, Kentucky does not have any interoperability SOPs with other states. Kentucky has and continues to participate in multi-state interoperability discussions primarily with contiguous states.

Training and Exercises

Training and Exercises

Overview

The response to any emergency is only as good as the training and planning that are put into it. Kentucky's first responders can enjoy all of the best equipment, but if the response expertise is not there, it is of no use. Kentucky has synchronized its training and exercise programs to help us better identify our weak areas and implement appropriate training to address those areas. By working closely with the Kentucky Community Technical College System, State Fire Rescue Training, Division of Emergency Management, Kentucky National Guard, Department for Public Health, Kentucky Area Development Districts, and many others, the state is now fully coordinating its planning efforts.

In 2009 Kentucky completed a major interoperability exercise with over 1100 participant representing various state and local agencies and first response organizations. The EOC was activated during one major exercise to deal with the actual flooding disaster in Louisville Metro.

All training and exercising events in the Commonwealth are geared to meet the Homeland Security Presidential Directive 8 (HSPD 8) that establishes measureable priorities, targets, and a common approach to developing needed capabilities among first responders.

For more information on the Kentucky Office of Homeland Security First Response Preparedness Program, go to:
http://homelandsecurity.ky.gov/firstresponse/

For information on the Kentucky Office of Homeland Security NIMS Program, go to:
http://www.homelandsecurity.ky.gov/firstresponse/nims.htm

Training

The KOHS Training Program provides preparedness-based training to enhance the capability of the state and local jurisdictions to prevent, protect, respond to, and recover from a full range of natural and man-made incidents that vary in scale and complexity. In 2009, thousands of first responders in Kentucky received some type of homeland security related training.

The KOHS Training Program currently provides both data and voice equipment to first responders and ensures that training is provided on both day-to-day and large scale emergency platforms. As Kentucky implements new communications tools and technologies, our training program will be updated to ensure timely and appropriate training to all user agencies.

National Incident Management System (NIMS) Training

Kentucky remains committed to ensuring that our state continues to maintain its certification for having trained first responders in NIMS. This incident management system continues to be a component of the exercise program. In addition, it is routinely used during real life emergencies in Kentucky such as the Ice Storm and floods of 2009.

In 2009 Kentucky first responders were offered various levels of NIMS training. These courses include:

IS100- Introductory Course to Incident Command
IS200- Basic Incident Command
ICS300 – Intermediate Incident Command
ICS400 – Advanced Incident Command
IS700- Introductory Course to the National Incident Management System
IS701- NIMS Multi-Agency Coordination System
IS703- NIMS Resource Management
IS800- Introductory Course to the National Response Plan
COML – Communications Unit Leader

NIMS is now a component of the new officer training out of the Kentucky Department of Criminal Justice Training.

For more information on the KOHS Training Program, go to:
http://www.homelandsecurity.ky.gov/firstresponse/training.htm

For more information on the NIMS Training Program, contact:
Tom Arnold, NIMS Coordinator, Tom.Arnold@ky.gov or 502-564-2081

Exercises

The Kentucky Homeland Security Exercise and Evaluation Program (KY-HSEEP) designs, develops, conducts, and evaluates exercises that test multi-jurisdictional relationships to include local, state, Federal and private sectors. The exercises are designed to evaluate stakeholders' preparedness to prevent, protect, respond to, and recover from incidents of various types and complexities. KY-HSEEP tests and validates policies, plans, procedures, training, equipment, and interagency agreements.

The KOHS has mandated that all voice and data communication solutions be a compulsory objective of each exercise. This includes use of the state mutual aid channels, operations of Mobile Data Computers (MDCs), use of the KyWINS data network and KyWINS Messenger system. After Action Reports are completed after each exercise to identify gaps or issues with each objective. Failure in any compulsory objective will be immediately addressed by an appropriate and timely training plan.

The Exercise and Evaluation Program will be updated annually, more if needed, to reflect the implementation of new communication technologies, modified SOPs, and any other associated changes to day-to-day or emergency operation policies and procedures.

For more information on the KY-HSEEP, go to:
http://www.homelandsecurity.ky.gov/firstresponse/exercise.htm

Photo by Elizabeth Thomas

Funding and Usage

Funding and Usage

Funding

Kentucky believes that no communications infrastructure or equipment should be purchased until there is a concrete plan in place to pay for its maintenance, upkeep, and end of life cycle replacement or upgrade. In order to accomplish this goal, the Commonwealth uses a three prong approach to funding. Major backbone and infrastructure projects such as KEWS or the statewide mobile data network are funded through direct appropriations through the legislature and federal grants in the form of one time appropriations. Maintenance, upkeep, and end of life cycle upgrades are then factored into the responsible agencies annual budget as individual line item appropriations. Local 911 infrastructure projects are purchased by locals usually with federal grants. Kentucky changed its telecommunication tax structure to ensure local 911 centers receive both wired-line and wireless surcharges.

Short life cycle equipment such as hand held and portable radios and MDCs are predominately purchased with local funds. Those items purchased with federal grant dollars have been vetted through a competitive application process. That process favors applications that prove they have plans in place to replace the equipment at the end of its life cycle. (See Appendix C: for information on the KOHS grant process)

Kentucky recognizes the need to develop a comprehensive funding strategy to support interoperable communications. As such, the KWIEC will establish a funding subcommittee that will develop a plan to assess anticipated maintenance and enhancement costs, identify on-going funding sources, and to leverage active projects as applicable. The committee will be chaired by Kentucky's Interoperability Coordinator with membership to include, but not be limited to, a representative of the Commonwealth Office of Technology, CIO of the KOHS, and local government. Once developed, the funding strategy will be managed by the KWIEC and remain closely aligned with future modifications to the interoperability plan.

Usage

The KOHS Chief Information Officer in partnership with the KOHS Training Program and the KSP will periodically monitor communications equipment usage in the field. This includes monitoring the use of interoperable technology solutions such as Voice Mutual Aid, KyWINS, and KyWINS Messenger. Such monitoring will better enable Kentucky to identify training deficiencies and to take the appropriate action to address them via additional field level training or incorporation into the KY-HSEEP.

Kentucky also requires agencies to sign User Agreements or MOUs when signing on for access to various communications systems. MOUs are currently in place for KyWINS Messenger and Voice Mutual Aid. A User Agreement has been implemented for use of the Shared Mobile Message Switch. The KOHS will work with the KSP to develop MOUs and/or User Agreements as needed to achieve our Near and Long-Term Strategic Initiatives.

Implementation

Implementation

Plan Implementation POC

KRS 42.738 (1) which states in part '*The executive director shall establish and implement a statewide public safety interoperability plan. This plan shall include the development of required architecture and standards that will insure that new or upgraded Commonwealth public safety communications systems will interoperate.*' tasks the executive director of the Office of Infrastructure Services, Commonwealth Office of Technology with responsibility for this document.

The Kentucky Office of Homeland Security has been tasked by the Governor's office to provide additional guidance over state interoperability efforts and act as a liaison with federal, state and local agencies to ensure compliance with DHS OEC directives related to interoperable communications.

The primary points of contact for this plan are listed below:

Primary POC:

Derek Nesselrode
State Interoperability Coordinator
502-227-8750
Derek.Nesselrode@ky.gov

Secondary POC:

Mary Pedersen
Chief Information Officer
Kentucky Office of Homeland Security
502-564-2081
Mary.Pedersen@ky.gov

Prioritized Action Plan

Kentucky continues its efforts on implementation of near term initiatives and is planning for all long term initiatives. Statewide coverage and streamlined dispatch services were given priority over the last two years of grant cycle funding from KOHS and the focus will now be placed on the FCC Narrowbanding mandate.

The Mutual Aid augmentation is in its final stages of planning and implementation is expected to begin by mid 2010. Also the KEWS digital upgrade project has now been funded and is expected to be completed in mid 2011. As these programs move forward, KOHS will continue to coordinate and collaborate with all state and local parties on the prioritization of long-term interoperable initiatives.

Kentucky recognizes that the need for a more thorough Prioritized Action Plan and is committed to convening the Public Safety Working Group and other subject matter experts from various local, state and NGO agencies annually to review the State Plan and develop a detailed action plan based on our documented near and long-term initiatives.

Performance Measurement Process

The execution of a performance management process will help ensure the successful achievement of the goals and initiatives outlined in this strategic plan. It will contribute to the stakeholders' understanding of the state-wide strategic plan, and to their understanding of how the state-wide plan will benefit them. The application of this plan will assist the public safety community in fulfilling its duty to make Kentucky a safe place to visit, work, and reside.

The output and related processes that are part of the performance approach begin with setting goals and performance measures. Once baselines and targets are established for each initiative, the data will be consolidated to provide a snapshot of actual performance. The data will provide Kentucky a mechanism to monitor execution of the state-wide plan. Goals are then achieved through the planning of project activities and alignment of resources. The KOHS, with guidance and assistance from the KWIEC, will then review execution of the project activities, and compare results to the performance measures. Unanticipated events and other factors will likely affect the program's ability to achieve some goals and initiatives. Therefore, the state-wide plan will be treated as a living document that the KOHS and KWIEC review annually, and adjust as necessary.

Outreach

Critical to the success of this strategy is the ability to communicate the content and status of current initiatives to the state-wide public safety community. Outreach is a strategic part of each initiative. Kentucky's public safety community has identified this area as an opportunity for improvement. As such, the KWIEC recognized the need to make outreach a priority and includes it as one of its annual goals..

Outreach functions include, but are not limited to, the following:

- Distributing well-defined information on lessons learned, best practices, challenges and opportunities, and other matters to:
  - Local and state public safety responders and organizations
  - Regional representatives
  - State representatives
  - General Assembly members
  - Other key stakeholders and decision makers
  - NGOs such as local search and rescue, utility companies, The Red Cross and other organizations that may respond to incidents prompted by 9-1-1 calls

- Creating and executing a plan to educate the public, political figures, and the public safety community on the importance of communications and interoperability.

- Planning and hosting regional interoperability and communications focus groups. These focus groups will include NGOs to include volunteer first responder agencies and others as deemed appropriate.
  - Help promote regional communications and interoperability by building cross-discipline and jurisdictional relationships
  - Focus groups will assist in gathering regional insights

- On-going annual hosting of local, state, and regional exercises via the KY-HSEEP.

- On-going updates to the KWIEC Website @ www.KWIEC.ky.gov

Critical Success Factors

Kentucky has established the KWIEC as its primary point of accountability to manage public safety communications and interoperability issues state-wide. To ensure the on-going effectiveness of current interoperability initiatives and those contained in this strategic plan, it is critical that we ensure the following:

- Strong leadership
- High-level support
- Funding
- Other necessary resources
- Continued buy in from locals
- Continued buy in from elected officials
- On-going multi-agency and multi-discipline participation

With these factors in mind, this plan is based on the following assumptions:

- The Governor's Office supports this strategy, along with key local stakeholders in Kentucky. These stakeholders include, but are not limited to, the Center for Rural Development, Louisville Metro, the city of Lexington, and regions of Western and Northern Kentucky.
- Sufficient resources and staffing are authorized by the Governor.

Appendices

Appendix A: DMA Capabilities for Emergency Communications

DMA EMERGENCY COMMUNICATIONS RESOURCES: DMARCS

DMA's Primary Wireless System is the Department of Military Affairs Radio System (DMARCS). DMARCS is a statewide VHF High Band Two Way Radio System designed and operated to provide Direction and Control (Command and Control) communications from any location statewide back to the Kentucky Emergency Operations Center (EOC). The system uses frequencies licensed and awarded by the US Army and the Department of Defense. DMARCS consists of 53 repeaters statewide organized into 13 communications zones and interconnected by the KEWS Microwave Network. These communications zones mirror 13 of 14 KYEM Area boundaries and provide 95% mobile radio coverage statewide. DMARCS was upgraded during 2007 to an APCO 25 Digital Multicast encrypted two-way radio system. DMARCS depends on the KEWS network. To provide emergency communications with the loss of all or part of the KEWS network, all DMARCS VHF Repeaters default to repeater mode allowing for local communications around the repeater. In addition to the 53 statewide repeaters, DMARCS includes VHF Base Stations at 52 Armories and KYEM Area Offices. All of these sites have or have access to full time emergency power. To support a New Madrid Earthquake scenario, DMA has worked to create portable point to point VHF links to replace the loss of portions of the KEWS network between E-Town and Wendell Ford Regional Training Center near Greenville, KY and between WHFRTC and far Western KY. DMA and KYEM have successfully tested the use of airborne portable repeaters to conduct voice communications between the EOC and far Western Kentucky. Exercising has identified the need for a 100'+ portable tower for reliable voice communications between WHFRTC and Paducah. DMARCS can also be augmented with several portable VHF Analog and digital portable repeaters that are easily transportable. All DMARCS portable and mobile radios are programmed with the state mutual aid channels.

MOBILE COMMAND/COMMUNICATIONS VEHICLES

Both the National Guard and KYEM have new state of the art mobile command vehicles extensively equipped with wireless communications systems and were designed to support the incident commander, local government and the EOC with satellite data and interoperable voice communications. Both vehicles are equipped with multiple DMARCS voice radios with interoperability provided by multiple radios and JPS1000 switches. Both vehicles have robust satellite internet capability with VPN services provided back to the EOC for VOIP telephones, GIS, EOC Situational Awareness and full time video teleconferencing capability using PolyCom Equipment. The NG vehicle has a compliment of military radios for interoperability with their ground and aviation units. The KYEM vehicle has a fully equipped Amateur Radio "shack" that is fully interoperable with many Public Safety voice systems as well as ARES and MARS plus marine and aviation radios. Both vehicles have been exercised extensively using a variety of scenarios and have seen active service at the KY Derby, Thunder over Louisville, Bluegrass Games, the Governor's

Inauguration plus actual events such as the Bullitt County Train Derailment/Fire, Flight 5191 Crash and Ohio River Barge Incident. Both vehicles are equipped with analog VHF Analog Repeaters for local operations and interoperability plus a compliment of portable radios for the crew and local responders.

41st CST

The WMD 41st Civil Support Team in Louisville was established to deploy rapidly to assist a local incident commander in determining the nature and extent of an attack or incident; provide expert technical advice on WMD response operations; and help identify and support the arrival of follow-on state and federal military response assets. The mission of Weapons of Mass Destruction Civil Support Teams (WMD-CST) is to support local and state authorities at domestic WMD/NBC incident sites by identifying agents and substances, assessing current and projected consequences, advising on response measures, and assisting with requests for additional military support. The 41st is similarly equipped like the NG and KYEM command vehicles with robust mobile satellite data and voice communications capability that could be used to support emergency interoperability

JISCC
JOINT INCIDENT SITE COMMUNICATIONS CAPABILITY

The Kentucky National Guard has two JISCC "Kits" available for deployment to support the EOC, the incident commander, local government and other military forces responding to a disaster. First used during the response to Hurricane Katrina Kentucky's JISCC systems are trailer transportable using dedicated 1 ½ ton pickup trucks. Each system consists of five modules that are again similarly equipped like the NG and KYEM Mobile Command Vehicles and the 41st CST. Each Kit has reach back data communications using a robust satellite internet system. On Scene Command Post Integration is accomplished with this robust network and an interoperable ROIS switch. Each system or kit is equipped with two diesel generators, portable tent with floor, environmental units for heating and cooling the tent and misc. support equipment. The JISCC can be established within 1 hour after arrival at an incident.

SATELLITE COMMUNICATIONS

All KYEM Response vehicles, KYEM Mobile Command Vehicle and the EOC are equipped with MSV Satellite push to talk radios that are associated with the KY Health Alert Network. These radios provide both push to talk and telephone capability with field units and are used for backup communications. Both KYEM and DMA have GlobalStar phones but the service is currently cancelled due to poor satellite connectivity. The National Guard has a supply of operational Iridium satellite phones that are suitable for both voice and data but are dedicated to support NG Operations.

AMATEUR RADIO COMMUNICATIONS

Kentucky has a dedicated HAM radio operators located in most jurisdictions statewide that stand by to provide emergency communications for their local government and to provide

critical information to the EOC. Amateurs Radio Emergency Services (ARES) is an affiliation of amateur radio operators interested in providing emergency communications and conduct weekly communications nets to insure that they are prepared. Many are able to operate with emergency power and have the capability to transmit voice traffic worldwide, nationally and in the Commonwealth. The EOC and EM Mobile Command Vehicle are equipped to communicate statewide and nationally using all forms of amateur radio. The EOC is able to communicate with FEMA National and FEMA Region IV using FNARS HF Radio installed in the EOC. (See ARES/RACES Plan In the KY EOP)

MILITARY AFFILIATE RADIO
MARS

Made up of amateur radio operators, MARS serves the EOC and the National Guard providing a more disciplined and secure two-way radio message traffic handling. MARS members have official status as communicators from the Department of Defense and support communications using a network of repeaters and an open messaging product WINLINK 2000. MARS members statewide transmit data over HF radio to the KYEM Command Vehicle, NG Joint Operations Center and the EOC. The system eliminates the need for first or last mile connectivity with the internet. Messages may be transmitted in e-mail form and get to decision makers in a more concise and accurate format. This format has been exercised by the EOC with national, regional and state operators and was recently used during the CESPP exercise in October and the NG Seismic Exercise in March 2007 with great success.

Appendix B: Mutual Aid MOU

Memorandum of Understanding
for
Immediate Mutual Aid and Interoperability
between the
{Local Public Safety Agency}
and the
Kentucky State Police

1. Purpose of this Document

This Memorandum of Understanding (MOU) is intended to document the intention of the applicant agency's request for permission to operate on radio frequencies granted and assigned to the Kentucky State Police (KSP) by the Federal Communications Commission.

These channels will be collectively referred to as the Mutual Aid Frequencies and will be offered to applicant agencies who agree to abide by the rules of use. The Mutual Aid program will be provided to applicant agencies at no cost, and may be used with existing radios currently in use in the Commonwealth. Furthermore, KSP has agreed to staff the program so no additional personnel resources will be required by participating agencies.

By virtue of signing and submitting this MOU, the applicant affirms it will comply with the operational and technical guidelines, and the terms prescribed herein.

2. Immediate Mutual Aid Interoperable Communications

Immediate Mutual Aid Interoperability is the capability for agencies to tune into a dedicated frequency using the "Conventional Analog Mode" protocol that is shared among one or more public safety agencies. Public safety agencies can use either Talk-Around Mode or the Mutual Aid Repeaters to establish interoperable voice communications with other first-responders at the scene of an emergency. It would also allow first responders to establish an emergency communication link into the KSP Dispatch Center, and to request cross connects across the three separate frequency bands used by first responders in the commonwealth..

Achieving immediate voice communication interoperability among disparate systems will enable public safety workers to communicate with each other in order to manage their immediate responses to emergencies and situations where risk of life and limb are probable. These situations include, but are not limited to, natural disasters like flooding, forest fires, tornados, plant explosions, or terrorist attacks, and situations requiring mutual aid such as hot-pursuits, large traffic accidents, hostage situations, or Amber alerts.

This Memorandum of Understanding establishes operational and technical guidelines to support immediate mutual aid interoperability between public safety first responders that adds a new dimension to our effectiveness and efficiency to improve all aspects of Emergency Management in protecting our citizens and our first responders.

3. Responsibilities of the Parties

The Public Safety Agency agrees to:

- **I.** Continue to maintain their radio communication equipment to manufacture and FCC specifications.
- **II.** Maintain reasonable security from loss or theft, and unauthorized use for all radio communication equipment operating on any KSP frequencies.
- **III.** Report immediately to the KSP any incident that causes loss of control of any radio communication equipment operating on any KSP Frequencies.
- **IV.** Submit a list indicating the number, make, and model of each type of radio communication equipment that will be programmed with the Mutual Aid frequency. (example: 20 Motorola, ABC Handheld, 15 Kenwood, CDE, vehicle mounted, 2 GE, XYZ Base Stations)
- **V.** Enable circuitry in the radio communication equipment to prevent transmitter hang-on in excess of three minutes.
- **VI.** Submit updates when new radio communication equipment programmed with the Mutual Aid frequency is brought into service and as old systems are retired.
- **VII.** Use "Plain English"[5] for all voice transmissions.
- **VIII.** Refrain from "In-House" radio traffic not pertaining to a Mutual Aid and Disaster Response / Coordination incident.
- **IX.** Notify the dispatcher as soon as frequency cross-connects are no longer required.
- **X.** Periodically check the Mutual Aid website for news, updates, and information.

The Kentucky State Policy agrees to:

- **I.** Secure and maintain FCC licensing for all mutual aid frequencies subject to this MOU.
- **II.** Coordinate, license and maintain any additional frequencies needed in the future to facilitate the mutual aid communication network.
- **III.** Incur expenses associated with securing, licensing, and maintaining the mutual aid communication network.
- **IV.** Use "Plain English"[1] for all voice transmissions.
- **V.** Monitor the Mutual Aid Calling Channels and provide assistance and BIM cross-connects as required by Incident Commanders.
- **VI.** Establish Quality of Service Metrics for the Mutual Aid Calling Channels.
- **VII.** Establish a Dispute Resolution Process.

[5] "Plain English" is clear language, in English, that can be understood without concerns of ambiguity. Jargon, 10 codes, acronyms, and agency specific terms or phrases will not be allowed.

VIII. Identify any inappropriate use of the Mutual Aid Calling Channels and mitigate the same from occurring in the future.

IX. Mitigate contention of Mutual Aid Channels by exercising discipline over the radio communication network.

X. Minimize traffic on all Mutual Aid Channels to maximize usage during emergencies.

4. MOU Submission

This MOU should be completed and returned with all information requested to the following address:

Kentucky State Police
Commander-Communications Branch
1240 Airport Road
Frankfort, KY 40601

Information concerning this program is located at the following URL:
http://www.kwiec.ky.gov/interoperability/mutualaid.htm

5. Period of Agreement

This MOU will be effective when signed by both parties and approved by the KSP Commissioner. Either party may terminate this agreement by providing written notification to the other party at any time.

The applicant agency must visit the Mutual Aid web site annually to update their information, download updates, make recommendations and comments, and to keep the agreement current. The web site will be reviewed periodically to ensure compliance and to consider recommendations to determine whether the MOU should be revised. Agencies failing to keep their agreement current may not be allowed to renew their agreement, or may be cancelled if blatant misuse is determined.

This web site will primarily serve as a focal point to disseminate new information, lessons learned, training, and other items of interest concerning the Mutual Aid Program.

6. Terms of Agreement

Use of KSP radio frequencies other than those terms listed herein by the applicant agency is prohibited and will be considered a violation of the agreement. Any such violation by the applicant agency will cause an automatic termination of this agreement.

Any willful violation of FCC Rules or Regulations by the applicant agency will be considered a violation of the agreement. Any such violation will cause an automatic termination of this agreement.

Any terms of this MOU found to be inconsistent or in conflict with any current KSP directives or policies may be deemed invalid by the Commissioner of the KSP, but the remaining terms will remain in effect.

7. General Applicant Agency Information

Applicant Agency **Date Submitted:** _____

Agency Name: _____
Street Address: _____
City, State, Zip: _____

Is the Applicant a State Agency? ☐ **Yes** ☐ **No**

What type of Agency are you? (Check all that apply)

☐ **Law Enforcement**
☐ **Emergency Medical**
☐ **Disaster Response**
☐ **Other Governmental, Provide Type** _____
☐ **Fire**
☐ **Emergency Management**
☐ **Military**

What is your Geographical area of responsibility? (Check all that apply)

☐ **Local (City/Township/Section)**
☐ **Regional**
☐ **County**
☐ **Statewide**

8. Agency Liaison and Standing Committee Member

To facilitate the implementation of this MOU, the applicant agency and the KSP each agree to designate a liaison officer to serve on a standing committee that will meet as needed, but no less than once in five years. Matters of consideration are to include a review of each agency's participation in the MOU, an assessment of the MOU's effectiveness, and modifications that might be necessary. As appropriate, the standing committee reserves the right to meet in a timely fashion to address urgent issues and specific cases of noncompliance.

Applicant Agency Liaison Officer (*assigned by Agency*)

Name: (print):_____ Telephone: _____

Email: _____ Date assigned: _____

Kentucky State Police Liaison Officer (*assigned by KSP*)

Name: (print):_____ Telephone: _____

Email: _____ Date assigned: _____

9. Applicant Agency Frequency Requirements

Which Mutual Aid Frequency are you applying to operate within? (Check all that apply)

The 150MHs VHF channels are simplex only while the 450MHz and 800MHz channels are repeated. To use the 450MHz or 800MHz channels in Simplex (also know as Direct, talk-around, or non-repeated) mode, program both transmit and receive frequencies with the same frequency listed under the "Receive/ Direct" frequencies.

☐ **150 MHz Frequency Band**

PL = 156.7

ID	Direct	Use
VMA -	155.4750 MHz	Primary Call Channel
VCALL -	155.7525 MHz	
VTAC 1 -	151.1375 MHz	
VTAC 2 -	154.4525 MHz	
VTAC 3 -	158.7375 MHz	
VTAC 4 -	159.4725 MHz	

☐ **450 MHz Frequency Band**

PL = 162.2

ID	Transmit	Receive/Direct	Use
UMA	458.300 MHz	453.300 MHz	Primary Call Channel

☐ **800 MHz Frequency Band**

PL = 156.7

ID	Transmit	Receive/Direct	Use
ICALL -	806.0125 MHz	851.0125 MHz	Primary Call Channel
ITAC 1 -	806.5125 MHz	851.5125 MHz	Police
ITAC 2 -	807.0125 MHz	852.0125 MHz	Fire
ITAC 3 -	807.5125 MHz	852.5125 MHz	EMS

ITAC 4 - 808.0125 MHz 853.0125 MHz Command and Control

10. Applicant Agency Radio Information

What radio systems will the Mutual Aid Frequencies be programmed into? (Check All That Apply)

☐ **Hand Held** ☐ **Vehicle Mounted Mobile** ☐ **Base Stations**

List the make, model, and number of radios in your agency that will be programmed with the mutual aid frequency.

Manufacturer Name	**Model Number**	**Number of Radios**

11. Acceptance and Approval of Authorizing Officials

Applicant Agency

I do hereby certify that all radio equipment listed above is the type accepted in the Commercial Land Radio Service and is suitable for use as a public safety wireless device. I further agree that I will take this piece of two-way radio equipment out of service immediately if it is found to be out of tolerance, causes any interference to other similar radio equipment and/or it is determined that it is not type accepted.

I furthermore indicate that as the executive authority in this agency, all subordinate employees who are granted access to these frequencies have received, or will receive National Incident Management System (NIMS) training prior to using these frequencies.

I, as the executive authority to enter into formal agreement, and on behalf of the employees of my agency who will have access to radios listed in this MOU, hereby accept and will abide by all terms contained within this MOU.

Applicant Agency Executive Authority – Name: _____

Title of Executive Authority: _____

Signature: _____ **Date Signed:** _____

Commissioner, Kentucky State Police

I, as the Commissioner of the Kentucky State Police, am herby granting permission for the applicant agency to transmit/receive on the frequencies that have been checked.

Commissioner, Kentucky State Police: _____

Signature: _____ **Date Signed:** _____

Stop

Please ensure all information within this MOU is completely filled out, and the executive authority's signature is present. Make a copy for your records and return this complete packet to the address indicated within.

Once submitted, the Agency's name should appear on the "Authorized Users" document at the URL listed below within ten working days.

For questions concerning this document, contacts, authorized users, and other updates, please check the following URL:

http://www.kwiec.ky.gov/interoperability/mutualaid.htm

For comments, questions, or recommendations, please send an email stating to the Mutual Aid Program Manager at the below email address.

Derek.Nesselrode@ky.gov

Appendix C: KyWINS Messenger MOU

Introduction
The Kentucky statewide wireless data system has been designed so that it will handle the data communications traffic for all first responder agencies which include but are not necessarily limited to Police, Sheriff, EMT, fire, and Emergency Management. The long-term intent of the Kentucky Wireless Information Network Service (KyWINS) is to supply a standard communications platform for all first response agencies.

The initial emphasis was on law enforcement and its use of the LINK/NCIC system via the wireless state network. The law enforcement information is queried through the use of a variety of different mobile software interfaces such as Bio-Key Mobile Cop, New World, Premier MDC, and VisionTek. By using different mobile packages, the agencies are limited in their ability to communicate with each other via the KyWINS system. Additionally, non-law enforcement agencies do not have the need for the mobile software since they do not perform LINK/NCIC checks.

To overcome these communication limitations Kentucky has developed an open-source messenger service, which can be used by a first response agency regardless of which type of mobile software it uses. This KyWINS Messenger is free to all agencies and it does not have any recurring costs for the agency to bear. The messenger software package allows an individual to send instant messages to any other person who has both the messenger software on their MDC and wireless access to the State's secure network. It also provides its users with the capability to join conferences of many users to share real time information between multiple individuals. This software also doesn't interfere with any existing software used for instant messaging communication.

KyWINS Messenger Administration
KyWINS Messenger Server
The Messenger software requires a central server to handle its traffic in a similar manner as the Bio-Key shared server. The state has supplied this server and associated software which relieves each agency of its own investment in additional hardware. In order to use of Messenger system an agency needs only to obtain a free copy of the Messenger software and have each person sign a user agreement. The user agreement is kept at the agency level and is a tool to indicate that the individual understands the security requirements of using the system.

The Messenger module does not require the same level of security and access control that is necessary for LINK/NCIC access. Other first response units such as fire and EMS can use it. It is important for law enforcement officers to be aware that no LINK/NCIC data should be copied into a Messenger communication, as it would compromise the security of that data. While the Messenger module offers a secure form of communication within the state network, the recipients of the messages may not hold the level of security necessary for viewing the secure data

System Administration

Administrative functions for the KyWINS Messenger shall be the responsibility of KSP. These functions include managing user names, system rights, maintaining proper system configuration, enabling and disabling system features, and recording and unloading archival files.

The system will only allow users with administrative privileges to access the system and user configuration files.

Passwords

Each user is in charge of setting his/her own password for the KyWINS Messenger. When initially set up in the system, the password will be a default by the system administrator. The user needs to change the password to a secure entry that is not easily guessed. Do not use personal information such as names of family members, birth dates, or pet names.
Some guidelines for setting a secure password:

- Passwords should not be a dictionary word or proper name
- Passwords and the userid shall not be the same
- No family names, birth dates, license plate number, SSN, phone number
- Use a mix of letters and numerals
- Use a mix of upper and lower case letters
- Use a minimum of 8 letters but no more than 18
- Do not write the password down or post it near the computer
- Do not share your password with anyone else

Message Logging

All agency transactions are logged electronically on the KyWINS Messenger switch. The log includes:
Instant message
Date & time
User Name
Electronic logs shall be maintained for a minimum of thirty (30) days.

By signing below, I acknowledge that I understand the user requirements and this agency will comply with all rules for participation in the KyWINS Messenger switch.

_____ _____

Authorized Signature Date

_____ _____

Agency Name Title

Mail MOU to:
Kentucky State Police
Attn: Angie Douglas
1250 Louisville Road
Frankfort, KY 40601

Table 1 – Acronyms

API	Application Protocol Interface
CAD	Computer Aided Dispatch
COT	Commonwealth Office for Technology
CRD	The Center for Rural Development
DOCJT	Department of Criminal Justice Training
DOJ	Department of Justice
IPNC	Internet Protocol Network Controller
KOHS	Kentucky Office of Homeland Security
KSP	Kentucky State Police
KYEM	Kentucky Emergency Management
LINK	Law Information Network of Kentucky
MDC	Mobile Data Computer
MDM	Mobile Data Manager
NCIC	National Crime Information Center
NLETS	National Law Enforcement Telecommunications System
RMS	Records Management System
SMMS	Shared Mobile Message Switch
UCJIS	Unified Criminal Justice Information System

Appendix D: KOHS Grant Process

Purpose

The purpose of this directive is to establish guidelines for the homeland security grant processes, including the U.S. Department of Homeland Security appropriation to individual State Administrative Agencies (SAA) and the responsibilities of the Kentucky Office of Homeland Security in coordinating grant requests and disbursements to state and local agencies.

Policy

A. When the U.S. Department of Homeland Security (DHS) receives an appropriation, it makes a determination of the amount of funding each state will receive.

    a. DHS notifies states of the money that is available for application.

    b. DHS provides guidelines detailing the criteria which must be followed when applying for and distributing these funds.

    c. The KOHS applies to DHS to receive consideration for funding.

    d. KOHS receives award notification from DHS.

    e. When KOHS receives a final award letter from DHS, the 60 day timeframe the state has to fulfill all compliance procedures begins.

B. The Kentucky Office of Homeland Security (KOHS) provides an updated application to state and local agencies based on DHS guidance and the KOHS Strategic Plan.

    a. The KOHS provides regional training conferences for grant applicants and individual technical assistance as requested.

    b. Local and state agency applications are sent to KOHS. Each agency must submit multiple copies of their grant application.

C. KOHS creates independent technical review teams that consist of subject matter experts with varied experience and skills.

    a. These reviewers include, but are not limited to, current and retired Emergency Medical Technicians (EMT's), firefighters, law enforcement, and other applicable state agencies.

    b. Voluntary teams of three are formed representing the various levels of expertise and skills.

c. All reviewers are required to sign a confidentiality agreement and an agreement to disqualify themselves if they have a conflict of interest with a grant they are reviewing.

d. Each individual reviews and scores each application individually; however, individuals may discuss portions of the application with other team members.

e. The individual team scores are then averaged for each application to include the addition of bonus points.

f. The scoring sheets then go to KOHS who reviews the technical review scores to ensure bonus points were awarded correctly and overall scoring is mathematically accurate.

D. The KOHS executive staff then performs a functional review and provides preliminary recommendations based on the reviewer's scores and the KOHS Strategic Plan.

a. The KOHS consolidates the recommendations into a final recommendations document.

E. The Homeland Security Working Group is presented with the applications and the final recommendations document.

a. The Homeland Security Working Group votes to accept recommendations or make changes.

b. Award letters are mailed to successful applicants.

c. Conciliatory letters are mailed to unsuccessful applicants.

F. KOHS sends award information to DHS and DHS ensures that all awards adhere to federal guidelines and appropriate processes.

G. Master Agreements are created between the KOHS and award recipients.

a. Following appropriate signatures the Master Agreement is sent to Finance who reviews, approves and releases the funds.

b. Interoperability grants must also be approved by the Kentucky Wireless Interoperability Executive Committee (KWIEC.)

H. Award recipients can then proceed with project implementation as detailed in their agreements with the KOHS.

I. Each award recipient is reimbursed after funds are expended and proper documentation is provided to the KOHS.

J. The KOHS continuously monitors and provides technical assistance for the award period of the grants.

K. Upon the completion of the grant project, a final site visit is conducted to verify compliance with the KOHS agreement.

Appendix E: SCIP Evaluation Criteria Compliance Matrix

Criteria #	Description	Section/Page #
1.	**Background and Preliminary Steps**	
1.1	Provide an overview and background information on the state and its regions. Include geographic and demographic information.	Page 6
1.2	List all agencies and organizations that participated in developing the plan. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)	Pages 46
1.3	Identify the point of contact. DHS expects that each state will have a full time interoperability coordinator. The coordinator should not represent or be affiliated with any one particular discipline and should not have to balance the coordinator duties with other responsibilities.	Page 2
1.4	Describe the communications and interoperability environment of the current emergency response effort.	Pages 16
1.5	Include a problem definition and possible solutions that addresses the challenges identified in achieving interoperability within the SAFECOM Interoperability Continuum.	Page 19
1.6	Identify any Tactical Interoperability Communications Plans in the state.	Page 51
1.7	Set the scope and timeframe of the plan.	Page 43
2.	**Strategy**	
2.1	Describe the strategic vision, goals, and objectives for improving emergency response interagency wireless communications statewide, including how they connect with existing plans within the state.	Page 3
2.2	Provide a strategic plan for coordination with neighboring states. If applicable, include a plan for coordination with neighboring countries.	Page 3
2.3	Provide a strategic plan for addressing data interoperability in addition to voice interoperability.	Page 18
2.4	Describe a strategy for addressing catastrophic loss of communication assets by developing redundancies in the communications interoperability plan.	Page 4
2.5	Describe how the plan is, or will become, compliant with the National Incident Management System (NIMS) and the National Response Plan.	Page 4
2.6	Describe a strategy for addressing communications interoperability with the safety and security elements of the major transit systems, intercity bus service providers, ports, and passenger rail operations within the state.	Page 5
2.7	Describe the process for periodic review and revision of the state plan.	Pages 47
3.	**Methodology**	
3.1	Describe the method by which multi-jurisdictional, multi-disciplinary input was provided from all regions of the state. For an example of a methodology that ensures input from all regions, see the Statewide Communication Interoperability Plan, or SCIP, methodology developed by SAFECOM.	Page 46
3.2	Define the process for continuing to have local input and for building local support of the plan.	Page 50
3.3	Define how the TICPs were incorporated into the statewide plan.	Page 51
3.4	Describe the strategy for implementing all components of the statewide plan.	Page 32-43
4.	**Governance**	
4.1	Identify the executive or legislative authority for the governing body of the interoperability effort.	Page 23
4.2	Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all of the relevant emergency response disciplines and regions in the state.	Page 23
4.3	Identify the executive or legislative authority for the governing body of the interoperability effort.	Page 23

4.4	Provide an overview of the governance structure that will oversee development and implementation of the plan. Illustrate how it is representative of all of the relevant emergency response disciplines and regions in the state.	Page 23
4.5	Provide the charter for the governing body, and use the charter to state the principles, roles, responsibilities, and processes.	Page 23
4.6	Identify the members of the governing body and any of its committees. (List them according to the categories recommended for a communications interoperability committee in the All-Inclusive Approach section above.)	Page 26
5.	**Technology**	
5.1	Include a statewide capabilities assessment (or a plan for one) which includes, critical communications equipment and related interoperability issues. At a minimum this should include types of radio systems, data and incident management systems, the manufacturer, and frequency assignments for each major emergency responder organization within the state. Ultimately more detailed information will be required to complete the documentation of a migration strategy. States may use the Communications Asset Survey and Mapping (CASM) tool to conduct this assessment.	Page 54
5.2	Describe plans for continuing support of legacy systems, and developing interfaces among disparate systems, while migrating to newer technologies.	Page 56
5.2.1	Describe the migration plan for moving from existing technologies to newly procured technologies.	Page 57
5.2.2	Describe the process that will be used to ensure that new purchases comply with the statewide plan, while generally allowing existing equipment to serve out its useful life.	Page 57
6.	**Standard Operating Procedures (SOPs)**	
6.1	Include an assessment of current local, regional, and state operating procedures which support interoperability.	Page 58
6.2	Define the process by which the state, regions, and localities will develop, manage, maintain, upgrade, and communicate standard operating procedures (SOPs), as appropriate.	Page 58
6.3	Identify the agencies included in the development of the SOPs, and the agencies expected to comply with the SOPs.	Page 58
6.4	Demonstrate how the SOPs are NIMS-compliant in terms of the Incident Command System (ICS) and preparedness.	Page 58
7.	**Training and Exercises**	
7.1	Define the process by which the state will develop, manage, maintain and upgrade, or coordinate as appropriate, a statewide training and exercises program.	Page 60
7.2	Describe the process for offering and requiring training and exercises, as well as any certification that will be needed.	Page 61
7.3	Explain how the process ensures that training is cross-disciplinary.	Page 60
8.	**Usage**	
8.1	Describe the plan for ensuring regular usage of the relevant equipment and the SOPs needed to improve interoperability.	Page 64
9.	**Funding**	
9.1	Identify committed sources of funding, or the process for identifying and securing short- and long-term funding.	Page 64
9.2	Include a plan for the development of a comprehensive funding strategy. The plan should include a process for identifying ongoing funding sources, anticipated costs, and resources needed for project management and leveraging active projects.	Page 64
10.	**Implementation**	
10.1	Describe the prioritized action plan with short- and long-term goals for achieving	Page 67

	the objectives.	
10.2	Describe the performance measures that will allow policy makers to track the progress and success of initiatives.	Page 67
10.3	Describe the plan for educating policy makers and practitioners on interoperability goals and initiatives.	Page 68
10.4	Describe the roles and opportunities for involvement of all local, state, and tribal agencies in the implementation of the statewide plan.	Page 50
10.5	Establish a plan for identifying, developing, and overseeing operational requirements, SOPs, training, technical solutions, and short- and long-term funding sources.	Page 58; __
10.6	Identify a POC responsible for implementing the plan.	Page 66
10.7	Describe critical success factors for implementation of the plan.	Page 69
11.	**PSIC Requirements**	
11.1	Describe how public safety agencies will plan and coordinate, acquire, deploy and train on interoperable communications equipment, software and systems that: 1) utilize reallocated public safety - the public safety spectrum in the 700 MHz frequency band; 2) enable interoperability with communication systems that can utilize reallocated public safety spectrum for radio communications; or 3) otherwise improve or advance the interoperability of public safety communications system that utilize other public safety spectrum bands	Read entire Plan
11.2	Describe how a strategic technology reserve (STR) will be established and implemented to pre-position or secure interoperable communications in advance for immediate deployment in an emergency or major disaster.	Page 36
11.3	Describe how local and tribal government entities' interoperable communications needs have been included in the planning process and how their needs are being addressed.	Page 50; 68
11.4	Describe how authorized non-governmental organizations' interoperable communications needs have been included in the planning process and how their needs are being addressed (if applicable).	Page 15

Appendix F: Glossary of Terms

Analog: A signal that may vary continuously over a specific range of values.

Band*: the spectrum between two defined limited frequencies. For example, the Ultra High Frequency (UHF) is located from 300 MHz to 3,000 MHz in the radio frequency spectrum.

Bandwidth: The range within a band of frequencies; a measure of the amount of information that can flow through a given point at any given time.

Block grant: Federal grant funding that is allocated to state and localities based on a pre-determined statutory formula.

Channel*: A single unidirectional or bidirectional path for transmitting or receiving, or both, of electrical or electromagnetic signals.

Communications interoperability: The ability of public safety agencies to talk across disciplines and jurisdictions via radio communications systems, exchanging voice and/or data with one another on demand, in real time, when needed, and as authorized.

Communications system*: A collection of individual communication networks, transmission systems, relay stations, tributary stations, and data terminal equipment usually capable of interconnection and interoperation to form an integrated whole. The components of a communications system serve a common purpose, are technically compatible, use common procedures, respond to controls, and operate in unison.

Coverage*: The geographic area included within the protected range of a wireless radio system based upon their FCC licenses.

Cycle: One complete performance of a vibration, electrical oscillation, current alternation, or other periodic process.

Digital: Voice communication occurs as an analog signal; that is, a signal with a voltage, frequency, or phase level that continuously varies. Digital signals at baseband occur as the presence or absence of electronic pulses, often representing only one or many values. Voice transmissions may be sent over digital radio systems by sampling voice characteristics and then converting the sampled information to a digital format.

Discretionary grant: Federal grant funding distributed at the discretion of the agency administering the program funding, usually through a competitive process.

Emergency Management: Public protection, central command and control of public safety agencies during emergencies.

Environmental Health/Hazardous Materials specialists: environmental health personnel; Homeland Security and Defense units; Search and Rescue teams; Transportation personnel

First responders: Individuals who in the early stages of an incident are responsible for the protection and preservation of life, property, evidence, and the environment, including emergency response providers, as well as emergency management, public health, clinical care, public works, and other skilled support (such as equipment operators) that provide immediate support services during prevention, response, and recovery operations.[6]

Formula grant: Federal grant that is allocated based on a predetermined statutory formula.

Frequency*: The number of cycles or events of a periodic process in a unit of time.

Frequency bands*: Where land mobile radio systems operate in the United States, including:

High HF	25-29.99 MHz
Low VHF	30-50 MHz
High VHF	150-174 MHz
Low UHF	450-470 MHz
UHF TV Sharing	470- 512 MHz
700 MHz	764-776/794-806 MHz
800 MHz	806-869 MHz

Grant: Funding made available to local agencies from State and Federal government agencies, as well as from private sources, such as foundations. Grants usually require the submission of a formal application to justify one's funding request.

Hertz: Abbreviation for cycles per second.

Infrastructure*: The hardware and software needed to complete and maintain the radio communications system.

Interference*: Extraneous energy, from natural or man-made sources, that impeded the reception of desired signals.

Jurisdiction: The territory within which power or authority can be exercised.

Locality: A particular neighborhood, place, or district.

Modem: An acronym for modulator/demodulator, which is a device that translates digital signals coming from a computer into analog signals that can be transmitted over standard telephone lines. The modem also translates the analog signal back into a digital signal that a computer can understand.

[6] First Responder as defined the December 17, 2003, Homeland Security Presidential Directive/HSPD-8, Subject: National Preparedness

Mutual aid: The mutual aid mode describes major events with large numbers of agencies involved, including agencies from remote locations. Mutual aid communications are not usually well planned or rehearsed. The communications must allow the individual agencies to carry out their missions at the event, but follow the command and control structure appropriate to coordinate the many agencies involved with the event.

Mutual aid channel: A radio channel specifically allocated for use during emergency mutual aid scenarios.

Narrowbanding: Generally, narrowband describes telecommunication that carries voice information in a narrow band of frequencies. For state and local public safety, narrow-banding typically refers to the process of reducing the useable bandwidth of a public safety channel from 25 kHz to 12.5 kHz. The FCC issued the migration of Private Land Mobile Radio systems using frequencies in the 150-174 MHz and 421-512 MHz bands to narrowband technology. These rules set deadlines on applications for new wideband systems, modifications of existing wideband systems, manufacture and importation of 25 kHz equipment, the requirement for public safety to migrate to 12.5 kHz systems by January 2018.

Receiver: The portion of a radio device that converts the radio waves into audible signals.

Refarming: An administrative process which is being conducted by the FCC to reallocate channel bandwidths and, as a result, promote spectrum efficiency.

Repeater: In digital transmission, equipment that receives a pulse train, amplifies it, retimes it, and then reconstructs the signal for retransmission; in fiber optics, a device that decodes a low-power light signal, converts it to electrical energy, and then retransmits it via an LED or laser source. Also called a "regenerative repeater".

Spectrum: The region of the electromagnetic spectrum in which radio transmission and detection techniques may be used.

Spectrum efficiency: The ability to optimize the amount of information sent through a given amount of bandwidth.

Steering committee: A group of usually high-level officials charged with setting policy for a project.

Supplemental responders: Responders who provide support to first responders during incidents requiring special assistance. Supplemental responders include:

Transmitter: The portion of a radio device that sends out the radio signal.

Trunked radio system*: A system that integrates multiple channel pairs into a single system. When a user wants to transmit a message, the trunked system automatically selects a currently unused channel pair and assigns it to the user, decreasing the probability of having to wait for a free channel for a given channel loading.

Appendix G: Acronyms

APCO: Association of Public Safety Communication Officials
CAPRAD: Computer Assisted Pre-Coordination Resource and Database System
CASM: Communications Assets Survey and Modeling
COMLINC: Commonwealth's Link to Interoperable Communications
CPWG: Commonwealth Preparedness Working Group
DoD: Department of Defense
DOJ: Department of Justice
DHS: Department of Homeland Security
EDXL: Emergency Data Exchange Language
FCC: Federal Communications Commission
HF: High Frequency
ICR: Incident Command Response
ICRI: Incident Commander's Radio Interface
ICTAP: Interoperability Communications Technical Assistance Program
kHz: Kilohertz (1 thousand cycles per second)
KOHS: Kentucky Office of Homeland Security
KSP: Kentucky State Police
KWIEC: Kentucky Wireless Interoperability Executive Committee
KyEM: Kentucky Emergency Management
MCC: Mobile Communications Center
MHz: Megahertz (1 million cycles per second)
NENA: National Emergency Numbers Association
NIJ: National Institute of Justice
NIMS: National Incident Management System
NPSPAC: National Public Safety Advisory Committee
P25: Project 25
PSWG: Public Safety Working Group
PLMR: Private Land Mobile Radio
PMO: Project Management Office
UHF: Ultra High Frequency
VHF: Very High Frequency
VoIP: Voice over Internet Protocol